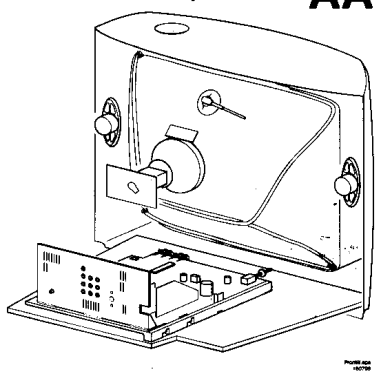
A8.0A
AA



Service
Service
Service

Service Manual

Table of contents

		Page	
1. Technical specifications		2	
2. Connection facilities and chassis overview		3	
3. Safety and maintenance instructions		4	
4. Mechanical instructions		6	
5. Service modes, Error messages and Repair tips		7	
6. Fault finding trees		17	
IIC diagram		20	
Supply voltages diagram		21	
Blockdiagrams		22	
Testpoint overviews		24	
Wire tree diagram		25	
7. Electrical Diagrams and print lay-outs			
		Diagram	*PWB*
Power supply	diagram A1	26	32,40
Horizontal deflection and line output	diagram A2	28	32,40
Vertical deflection	diagram A3	29	32,40
Tuner and VIF	diagram A4	30	32,40
Video processing	diagram A5	31	32,40
Sync	diagram A6	33	32,40
RGB Processing	diagram A7	34	32,40
Controls	diagram A8	35	32,40
Audio processing BTSC	diagram A10	36	32,40
Audio Processing NICAM/2CS/FM/AM	diagram A11	37	32,40
Audio Output	diagram A12	38	32,40
IO Switching	diagram A13	39	32,40
CRT panel	diagram B	42	41
East West panel	diagram C	43	43
I/O Cinch panel	diagram F	45	44
Comb filter panel	diagram G	46	47
Mains filter panel	diagram H	47	47
QSS-DK panel	diagram J	48	48
Side AV panel	diagram M	49	49
Top Control panel	diagram N	50	50
Incredible Sound panel	diagram Q	51	53
YUV panel	diagram R	52	53
OSD panel	diagram S	54	53
YC PIP 2nd front end	diagram T1	55	56
YC PIP YC Processing	diagram T2	57	56
Double Window	diagram A	58	62
Double Window	diagram B	59	62
Double Window	diagram C	60	63
Double Window	diagram D	61	63
IC Overviews		64	
8. Alignments		65	
9. Circuit description		69	
10. Directions for use		70	
11. List of abbreviations		76	
12. Spare parts list		78	

©Copyright reserved 1998 Philips Consumer Electronics B.V. Eindhoven, The Netherlands. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permision of Philips.

Published by SM9867 TV Service Department Printed in The Netherlands Subject to modification GB 4822 727 21612

PHILIPS

1 Technical specifications

Mains voltage

- Single voltage: 90V - 140V AC, 150V - 276V AC; 50-60Hz (+/- 2%)
- Multi voltage: 90V - 276V AC; 50-60Hz (+/- 2%)

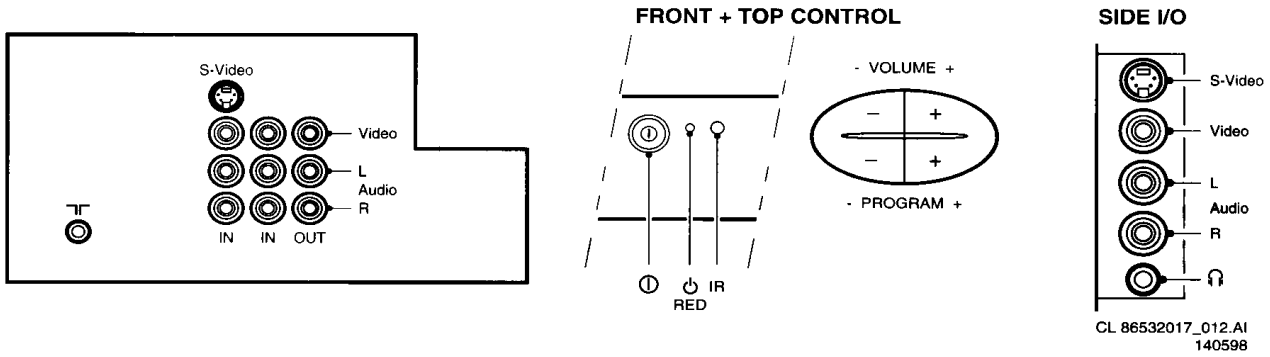
Maximum power consumption:180W
Standby power consumption:<= 10W
Pull-in range colour synchronisation:+/- 300 Hz
Pull-in range horizontal synchronisation:+200 / -300 Hz
Pull-in range vertical synchronisation:+/- 5 Hz
TV bands (tuner)

- PAL/Multi: TELE9-087A
- PAL/Multi (PIP): TELE9-088A
- NTSC: TELH9-205A
- NTSC (PIP): TELH9-206A
- China (/93): TELE9X108A
- China (/93) (PIP): TELE9X106A

SOFTWARE VERSIONS				
IDENT	SERVICE CODE	REMARKS	REPLACED BY	
			IDENT	CODE

2 Connection facilities and chassis overview

2.1 Specification of the terminal sockets



2.1.1 *Inputs (AV1, AV2 and Side AV)*

- Cinch CVBS (yellow) (1Vpp +/- 3dB 75Ω)
- Cinch Audio R (red) (0.2-2VRMS 10kΩ)
- Cinch Audio L (white) (0.2-2VRMS 10kΩ)

2.1.2 *Outputs (MONITOR out)*

- Cinch CVBS (yellow) (1Vpp +/- 3dB 75Ω)
- Cinch Audio R (red) (0.5VRMS < 1kΩ)
- Cinch Audio L (white) (0.5VRMS < 1kΩ)

2.1.3 *Headphone*

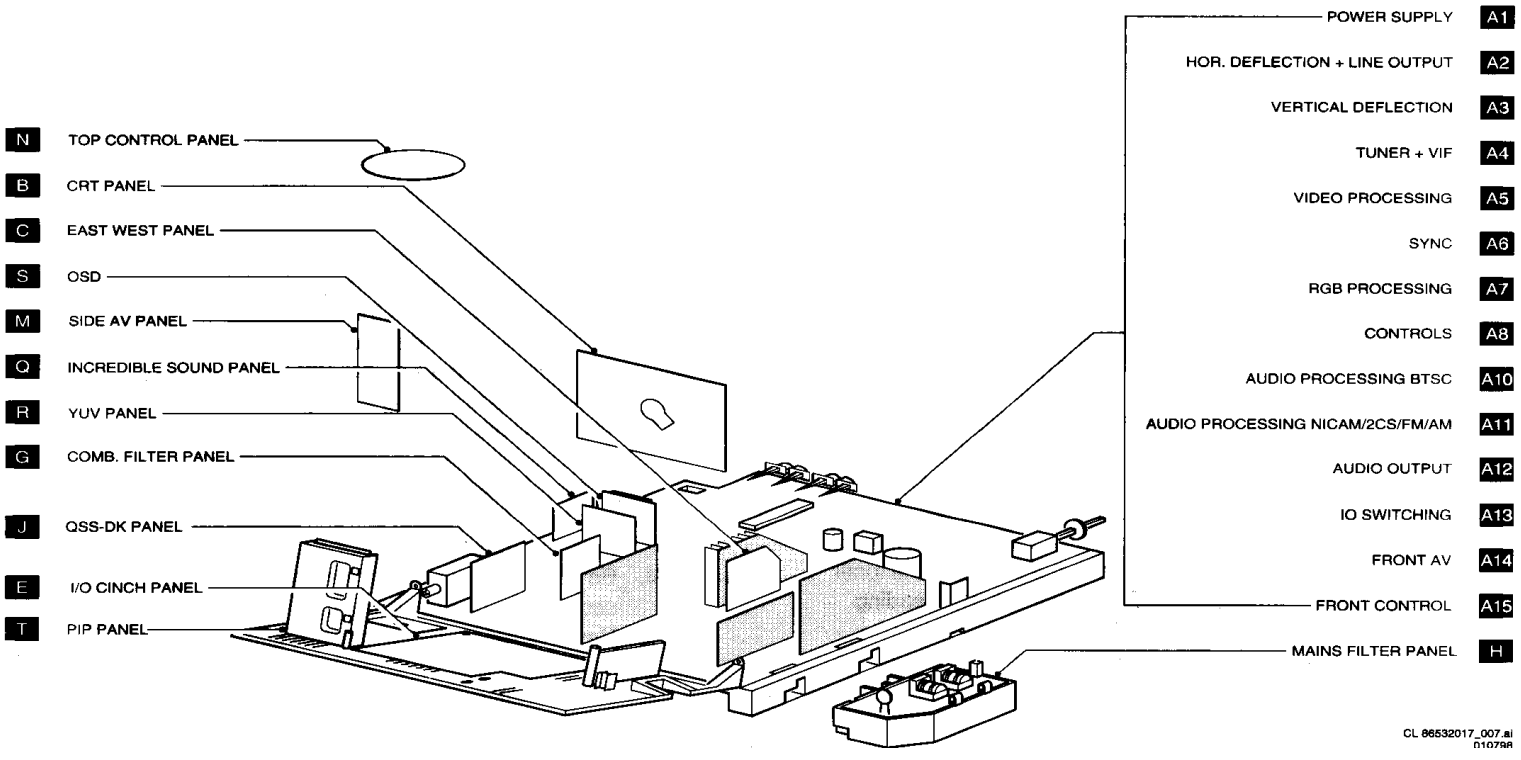
- Jack 32-2000 Ω(10mW)

2.1.4 *SVHS*

-

1. Ground
2. Ground
3. Y (1Vpp +/- 3dB 75Ω)
4. C (0.3Vpp +/- 3dB 75Ω)

2.2 PCB location drawing



3 Safety instructions, Maintenance instruction,

3.1 Safety instructions for repairs

Figure 3-1

1. Safety regulations require that during a repair:
   - the set should be connected to the mains via an isolating transformer;
   - safety components, indicated by the symbol (see fig. 3.1), should be replaced by components identical to the original ones;
   - when replacing the CRT, safety goggles must be worn.

2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.
   - As a strict precaution, we advise you to resolder the solder joints through which the horizontal deflection current is flowing, in particular:
     - all pins of the line output transformer (LOT);
     - fly-back capacitor(s);
     - S-correction capacitor(s);
     - line output transistor;
     - pins of the connector with wires to the deflection coil;
     - other components through which the deflection current flows.

     Note: This resoldering is advised to prevent bad connections due to metal fatigue in solder joints and is therefore only necessary for television sets older than 2 years. The wire trees and EHT cable should be routed correctly and fixed with the mounted cable clamps.

   - The insulation of the mains lead should be checked for external damage.
   - The mains lead strain relief should be checked for its function in order to avoid touching the CRT, hot components or heat sinks.
   - The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets which have a mains isolated power supply). This check can be done as follows:
     - unplug the mains cord and connect a wire between the two pins of the mains plug;
     - set the mains switch to the on position (keep the mains cord unplugged!);
     - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MW and 12 MW;
     - switch off the TV and remove the wire between the two pins of the mains plug.

   - The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

3.2 Maintenance instruction

It is recommended to have a maintenance inspection carried out by a qualified service employee. The interval depends on the usage conditions:

- When the set is used under normal circumstances, for example in a living room, the recommended interval is 3 to 5 years.
- When the set is used in circumstances with higher dust, grease or moisture levels, for example in a kitchen, the recommended interval is 1 year.
- The maintenance inspection contains the following actions:
  - Execute the above mentioned 'general repair instruction'.
  - Clean the power supply and deflection circuitry on the chassis.
  - Clean the picture tube panel and the neck of the picture tube.

3.3 Warnings

1. ESD
   All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
   - Available ESD protection equipment:
   - anti-static table mat (large 1200x650x1.25mm) 4822 466 10953
   - anti-static table mat (small 600x650x1.25mm) 4822 466 10958
   - anti-static wristband 4822 395 10223
   - connection box (3 press stud connections, 1 M ohm) 4822 320 11307
   - extension cable (2 m, 2 M ohm; to connect wristband to connection box) 4822 320 11305
   - connecting cable (3 m, 2 M ohm; to connect table mat to connection box) 4822 320 11306
   - earth cable (1 M ohm; to connect any product to mat or connection box) 4822 320 11308
   - complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
   - wristband tester 4822 344 13999

2. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.2 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0V (after approx. 30s).
3. Together with the deflection unit and any multipole unit, the flat square picture tubes used from an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
4. Be careful during measurements in the high-voltage section and on the picture tube.
5. Never replace modules or other components while the unit is switched on.
6. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.
7. Wear safety goggles during replacement of the picture tube

3.4 Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth , or hot earth as this is called (see fig. 3.3)
2. The direct voltages and oscillograms shown in the diagrams are indicative and should be measured in the Service Default Mode (see chapter 8) with a colour bar signal and stereo sound (L:3 kHz, R:1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3. Where necessary, the oscillograms and direct voltages are measured with and without aerial signal. Voltages in the power supply section are measured both for normal operation and in standby . These values are indicated by means of the appropriate symbols (see fig. 3.3).
4. The picture tube PWB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

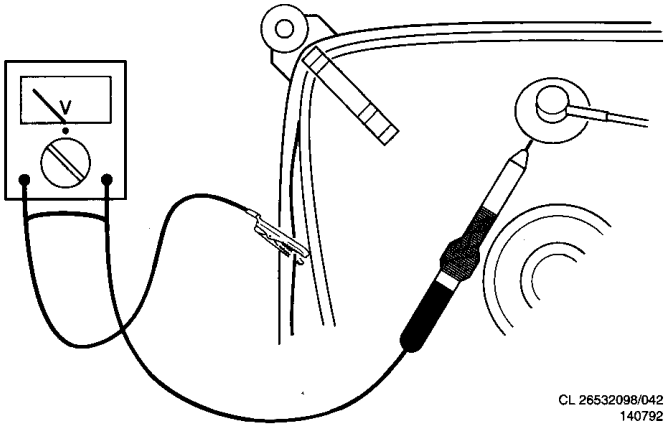


Figure 3-2

tuner earth tuner aarde la masse du tuner Tuner-Erde massa del tuner tierra del sintonizador	hot earth hete aarde la terre directe heißen Erde massa calda tierra caliente
with aerial signal met antenne signaal avec signal d'antenne mit Antennensignal con segnale d'antenna con la señal de antena	without aerial signal zonder antenne signaal sans signal d'antenne .ohne Antennensignal senza segnale d'antenna sin la señal de antena
normal condition normaal bedrijf fonctionnement normal normaler Betrieb funzionamento normale funcionamiento normal	stand by stand by position de veille in Bereitschaft modo di attesa posición de espera

Figure 3-3

4 Mechanical instructions

In this chapter the mechanical provisions of the A8 chassis are described

4.1 Removing the rear cover

In order to remove the rear cover from the A8, all screws at the side, the bottom and the top of the rear cover have to be removed. The screws on the I/O panel should NOT be removed.

Caution: Remember to disconnect subwoofer cable when present

4.2 Service positions

4.2.1 *Separate mains filter (figure 4.1)*

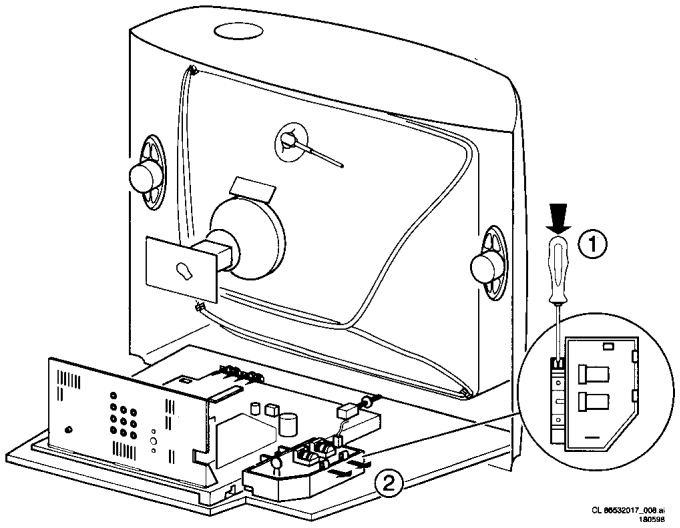


Figure 4-1

CAUTION! Unplug the mains cord before working on the separate mains filter; the separate mains filter carries permanent mains voltage (even when the mains knob is switched OFF).

To disconnect the separate mains filter bracket from the chassis tray:

- firmly depress the click (with a screwdriver) in the chassis tray (1)
- push the mains filter bracket in the direction of the CRT

To remove the separate mains filter panel from its bracket:

- push the 2 clips at the right hand side of the mains filter bracket outside (2)
- lift the panel from its bracket

4.2.2 *Mono carrier (figure 4.2)*

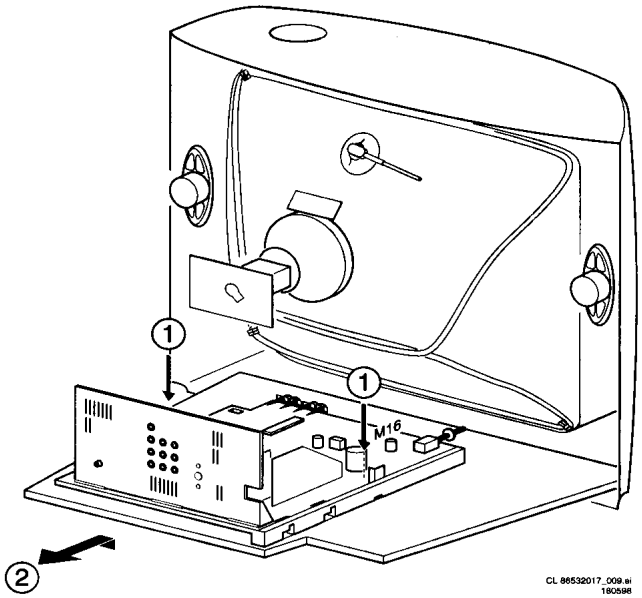


Figure 4-2

To remove the chassis tray from the cabinet:

- disconnect the degaussing coil (connector M16 on the mono carrier)
- pull the clips (1) backward and pull the chassis tray as indicated (2)

The chassis tray should be turned 90 degrees counter clock wise and flipped over to access the copper side of the mono carrier.

4.2.3 *Environment independent position (figure 4.3)*

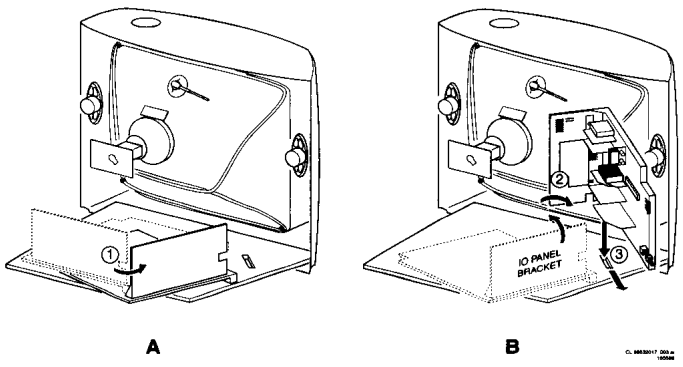


Figure 4-3

For home repair the chassis tray with mono carrier can be fixed in the cabinet.

- turn the chassis tray 90 degrees counter clock wise (1)
- flip the tray with the I/O panel towards the CRT (2)
- press (the hook of) the chassis tray firmly into the designated hole in the cabinet bottom (3) and pull the chassis tray backward (the speaker cables may have to be disconnected)

4.2.4 I/O panel (figure 4.4)

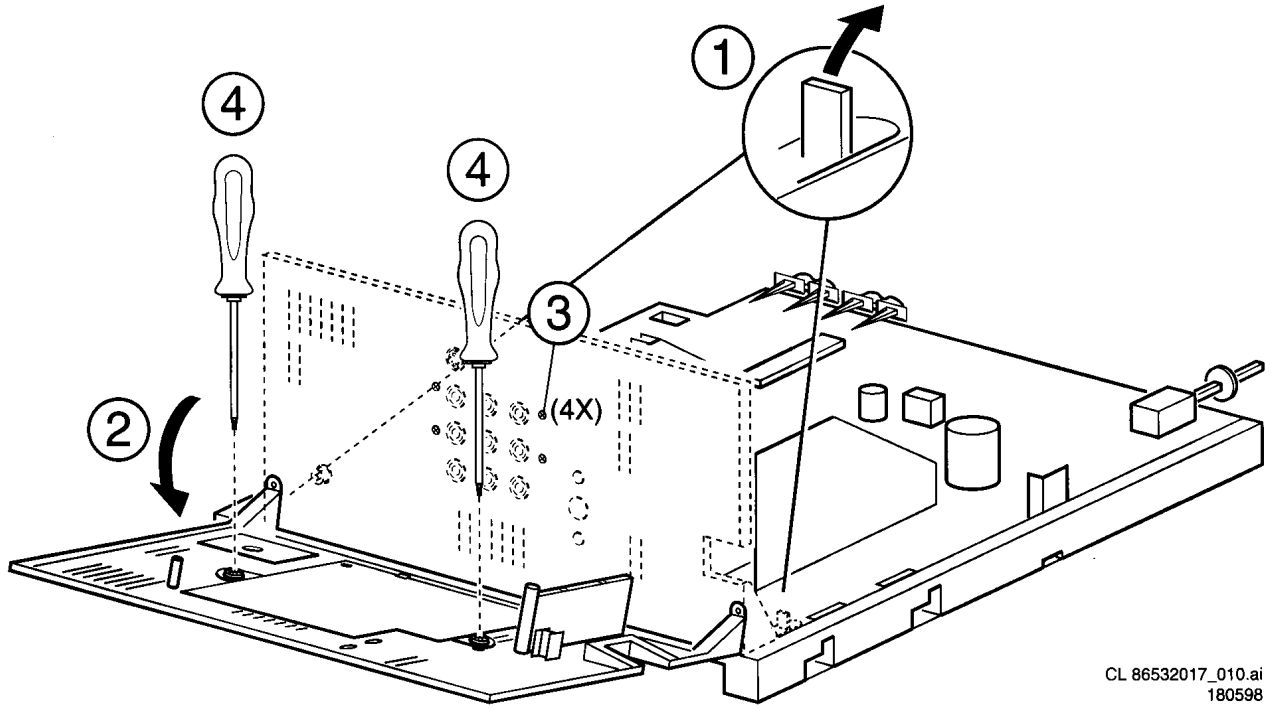


Figure 4-4

To access the copper side of the IO panel:

- push the clips (1) in the direction of the CRT (If the clips are broken, the I/O panel can also be screwed to chassis tray)
- slide the I/O panel bracket (2) to its horizontal position

To remove the I/O panel from its bracket:

- remove the 2 screws on the connector side of the panel (3)

4.2.5 Repairing the mono carrier (figure 4.5)

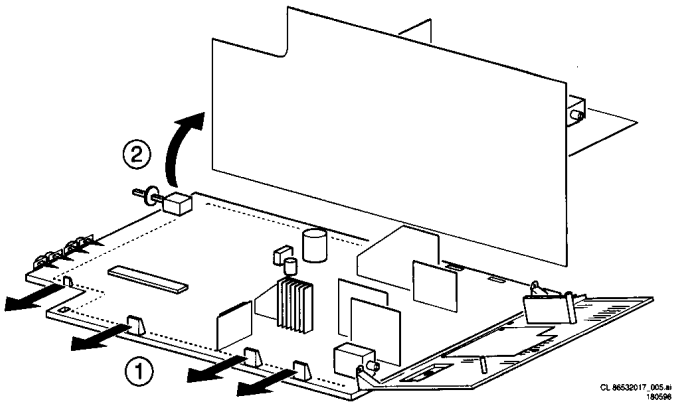


Figure 4-5

For full access to the component and copper side of the mono carrier, it can be removed from the chassis tray.

- push the clicks of the chassis tray outwards (1)
- lift the mono carrier from the tray

4.2.6 Removing the sub woofer box

To remove the sub woofer box:

- remove the rear cover and disconnect the sub woofer cable
- place the rear cover on a flat surface with the sub woofer faced up
- remove the 2 screws at the top and the 2 screws at the bottom of the sub woofer box

4.2.7 PIP/DW panel

To access the copper side of the panel:

- remove the screw above the antenna input at the back of the IO panel bracket
- remove the 2 screws by which the PIP/DW panel is fixed to the IO panel bracket

5 Service modes, error messages and repair tips

In this chapter the following paragraphs are included:

5.1 Test points
5.2 Service Modes and Dealer Service Tool (DST)
5.3 Error code buffer and error codes
5.4 The "blinking LED" procedure
5.5 Trouble shooting tips
5.6 Customer service mode

5.1 Test points

The A8 chassis is equipped with test points in the service printing. These test points are referring to the functional blocks:

- A1-A2-A3, etc.: Test points for the audio processing circuitry
- C1-C2-C3, etc.: Test points for the control circuitry
- F1-F2-F3, etc.: Test points for the frame drive and frame output circuitry
- I1-I2-I3, etc.: Test points for the intermediate frequency circuitry
- L1-L2-L3, etc.: Test points for the line drive and line output circuitry
- P1-P2-P3, etc.: Test points for the power supply
- T1-T2-T3, etc.: Test points for the teletext circuitry
- V1-V2-V3, etc.: Test points for the video processing circuitry

Measurements are performed under the following conditions:

Video: colour bar signal; audio: 3KHz left, 1KHz right

5.2 Service modes and Dealer Service Tool (DST)

For easy installation and diagnosis the dealer service tool (DST) RC7150 can be used. When there is no picture (to access the error code buffer via the OSD), DST can enable the functionality of displaying the contents of the entire error code buffer via the blinking LED procedure. The ordering number of the DST (RC7150) is 4822 218 21232.

5.2.1 Installation features for the dealer

The dealer can use the RC7150 for programming the TV-set with presets. 10 Different program tables can be programmed into the DST via a GFL TV-set (downloading from the GFL to the DST; see GFL service manuals) or by the DST-I (DST interface; ordering code 4822 218 21277). For explanation of the installation features of the DST, the directions for use of the DST are recommended (For the A8 chassis, download code 4 should be used).

5.2.2 Diagnose features for the servicer

A8 sets can be put in the two service modes via the RC7150. These are the Service Default Mode (SDM) and the Service Alignment Mode (SAM). SDM can also be entered by short circuiting the jumpers 9040 and 9041 on the chassis with a screwdriver.

Service Default Mode (SDM)
The purpose of the SDM is:

- provide a situation with predefined settings to get the same measurements as in this manual
- start the blinking LED procedure
- have to possibility to override the 5V protection

Entering the SDM:

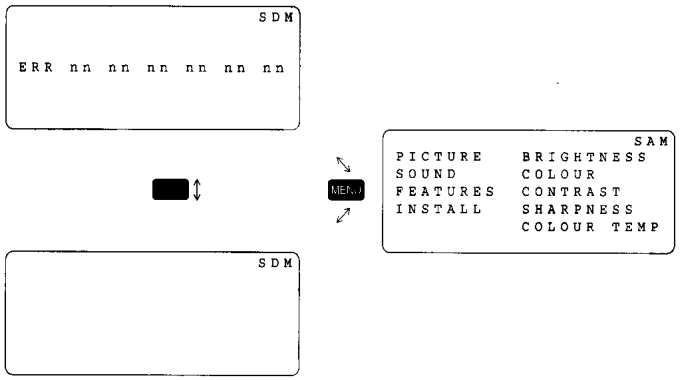
- By transmitting the "DEFAULT" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SAM)
- By shorting jumpers 9040 and 9041 on the monocarrier with a screwdriver while switching on the set

By temporarily shorting jumper 9040 and 9041 when switching the set on, the 5V protection is disabled.

CAUTION ! Overriding the 5V protection should only be used for a short period of time

Blinking LED procedure
When an error code is present in the error buffer, the LED will blink the number of times, equal to the value of the most current error code. For recognition of the SDM, "SDM" is displayed at the upper right side of the screen.

SDM Menu



CL 86532036_003.ai 260596

Figure 5-1 Service Default Mode screen

Exit the SDM: Switch the set to Standby (the error buffer is also cleared)

Note: When the mains power is switched off while the set is in SDM, the set will switch to SDM immediately when the mains is switched on again.

The SDM sets the following pre-defined conditions:

- Pal/Secam sets: tuning at 475.25 PAL
- NTSC sets: tuning at channel 3 (61.25MHz)

Volume level is set to 25% (of the maximum volume level). Other picture and sound settings are set to 50%. The following functions are switched off in SDM (and after leaving SDM):

- Timer
- Sleep timer

The following functions are disabled during SDM (and enabled after leaving SDM)

- Parental lock
- Hospitality Mode
- No-ident Timer (normally the set is automatically switched off when no video signal (IDENT) was received for 15 minutes).

All other controls operate normally.

Special functions in SDM
ACCES TO NORMAL USER MENU

Pressing the "MENU" button on the remote control switches between the SDM and the normal user menus (with the SDM mode still active in the background)

CHANNEL SEARCH

Pressing the "P+" button of the remote control starts a tuning search. Search is indicated by a blinking led (this stops when a transmitter is found; the transmitter is stored on the highest channel number, typically this is 99 and the tv switches to this preset)

ERROR BUFFER

Pressing the "OSD" button of the remote control shows/hides the error buffer. OSD can be hidden to prevent interference with oscillogram measurements.

ACCES TO SAM

By pressing the "VOLUME +" and "VOLUME -" buttons on the local keyboard simultaneously the set switches from SDM to SAM.

Service Alignment Mode (SAM)
The purpose of the SAM is to do alignments, option settings, display/clear the error code buffer and reload default values.

ENTERING SAM:

- By transmitting the "ALIGN" command with the RC7150 Dealer Service Tool (this works both while the set is in normal operation mode or in the SDM)
- By pressing the "VOLUME +" and "VOLUME -" key on the local keyboard simultaneously when the set is in SDM

EXIT SAM:

Switch the set to Standby (the error buffer will be erased)

Note: When the mains power is switched off while the set is in SAM, the set will enter to SDM immediately when the mains is switched on again.

In the SAM the following information is displayed on the screen:

SAM Menu

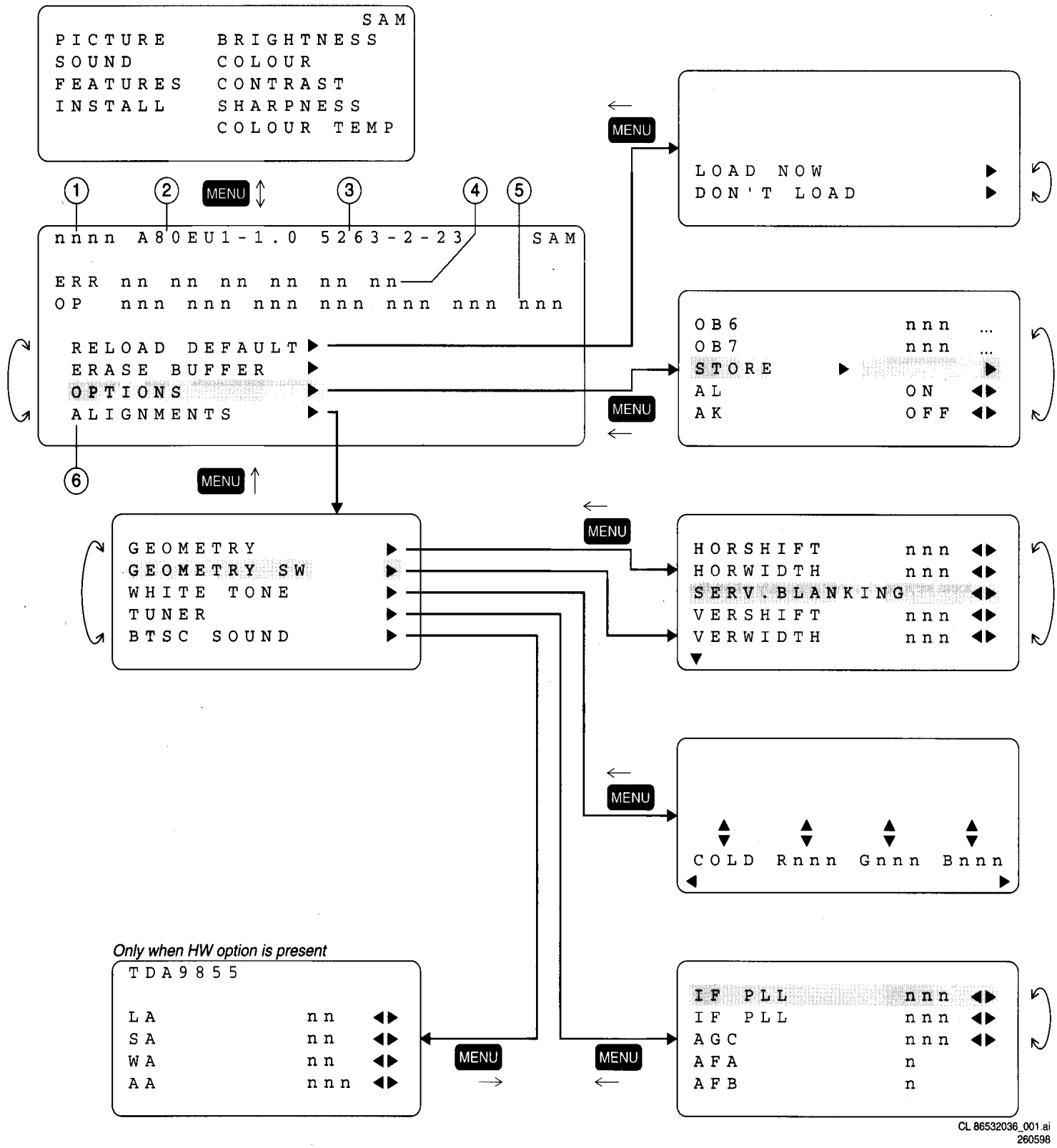


Figure 5-2 Service Alignment Mode screens and structure

Explanation notes/references:
(1) Operation hours timer (hexadecimal)

(2) Software identification of the main micro controller (A80BBC-X.Y)

- A80 is the chassis name for A8.0A
- BBC is 2 letter and 1 digit combination to indicate the software type and the supported languages:
  - PN1:Pal/Multi; NO teletext; English, Malay and Chinese
  - PN2:Pal/Multi; NO teletext; English and Hindi
  - PN3:Pal/Multi; NO teletext; English and Arabic
  - PT1:Pal/Multi WITH teletext; English, Malay and Chinese
  - NG1:NTSC; 2CS sound; English and Korean
  - NB1:NTSC; BTSC sound; English and Taiwanese
- X = (main version number)
- Y = (subversion number)

(3) Software identification of a separate Teletext micro controller (DDDD E FF) (not applicable for A8.0A)

(4) Error buffer (6 errors possible)

(5) Option bytes (7 codes possible), summary of options are explained below

(6) Sub menus are listed in a scroll-menu.

SAM MENU CONTROL

Menu items can be selected with the cursor UP/DOWN key. The selected item will be highlighted. When not all menu items fit on the screen, moving the cursor UP/DOWN will display the next/previous menu items.

With the cursor LEFT/RIGHT keys, it is possible to:

- (de)activated the selected menu item (e.g. LOAD DEFAULT)
- change the value of the selected menu item
- activate the selected submenu (e.g GEOMETRY)

ACCES TO NORMAL USER MENU

Pressing the "MENU" button on the remote control switches between the SDM and the normal user menus (with the SAM mode still active in the background). Pressing the MENU key in a submenu will go to the previous menu.

The menus and submenus
ERASE BUFFER

Erasing the contents of the error buffer. Select the ERASE BUFFER menu item and press the MENU RIGHT key. The contents of the error buffer is cleared.

RELOAD DEFAULT

Reloading memory default values. All default settings can be reloaded into the memory (EEPROM). Select the RELOAD DEFAULT menu item and press the MENU RIGHT key. Select LOAD NOW and press MENU RIGHT to reload all settings, then switch the set to STANDBY. The default settings are activated when the set is switched on. CAUTION! Use this menu with extreme care. Otherwise customer settings will be lost.

The functionality of the OPTIONS and ALIGNMENTS (GEOMETRY, GEOMETRY SW, WHITE TONE, TUNER and BTSC SOUND) sub menus is described in chapter 8.

5.3 Error code buffer and error codes

5.3.1 Error code buffer

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right.

- when an error occurs that is not yet in the error code buffer, the error is written at the left side and all other errors shift one position to the right
- the error code buffer will be cleared in the following cases:
- by activating the ERASE BUFFER in SAM menu
  1. exiting SDM or SAM with the "Standby" command on the remote control
  2. transmitting the commands "DIAGNOSE 99 OK" with the DST (RC7150) or with Compair

- The error buffer will be automatically reset if its contents have not changed for 50 hours
- By leaving SDM or SAM with the mains switch, the error buffer is not reset.

Examples:

ERROR: 0 0 0 0 0 0: No errors detected

ERROR: 6 0 0 0 0 0: Error code 6 is the last and only detected error

ERROR: 5 6 0 0 0 0: Error code 6 was first detected and error code 5 is the last detected (newest) error

5.3.2 Error codes

In case of a non-intermittent faults, clear the error buffer before starting the repair to prevent that "old" error codes are present. When possible check the entire content of the error buffers. In some situations an error code is only the RESULT of another error code (and not the actual cause).

Note: a fault in the protection detection circuitry can also lead to a protection.

Error 0 = No error

Error 1 = X-ray protection, E/W protection and/or Vertical protection. X-ray protection, E/W protection and/or Vertical protection active; set is switched to protection; error code 1 is placed in the error buffer; the LED will blink 1 time (repeatedly). If this happens, isolate each circuit to determine the cause. These circuits are:

- X-Ray protection:
- If this protection is active, the most likely cause is the LOT.
- EW protection:
- If this protection is active, the causes could be one of the following;
  - bad contacts of:
  - horizontal deflection coil
  - linearity coil 5621
  - S-correction capacitor 2629/2630
  - flyback capacitor 2613/2625
  - line output stage
  - short circuit of:
  - flyback diode 6621

- EW transformer (bridge coil) 5624/5625 or 5680/5682/5683 (version dependent)
- S-correction capacitor 2629/2630
- EW driver 7680

- Vertical protection:
- If this protection is active, the causes could be one of the following (most likely in the vertical output stage):
  - 7700 is faulty
  - poor contact or open circuit of deflection coil
  - +13V_+20V and/or -13V not present

Error 2 = High beam current protection. High beam protection active; set is switched to protection; error code 2 is placed in the error buffer; the LED will blink 2 times (repeatedly). As the name implies, the cause of this protection is a too high beam current (bright screen with flyback lines). Check whether the +200V supply to the CRT panel is present. If the voltage is present, the most like cause is the CRT panel or the picture tube. Disconnect the CRT panel to determine the cause. If the +200V voltage is not present, check R3840, R3643 and D6641.

Error 3 = Reserved

Error 4 = +5V protection. 5V protection active; set is switched to protection; error code 4 is placed in the error buffer; the LED will blink 4 times (repeatedly). A 5V failure can cause a drop in the 5V supply output, resulting in undefined behaviour of the set. Therefore, all I2C devices connected to the 5V supply are constantly monitored. When non of these devices responds to the micro controller for a prolonged time, the micro controller assumes that there is a failure in the 5V supply. By starting up the set with the service jumpers shorted, the 5V protection is disabled and it is easier to determine the cause.

+5V protection will be activated when these I2C devices fail (no I2C communication):

- Main Tuner 1125 on main panel
- ITT sound processor IC7430 on main panel
- PIP tuner (if present) on DW or YC PIP panel
- OSD generator IC7101 on OSD panel

The following tips are useful to isolate the problem area after overriding the +5V protection. Determine whether:

1. the +5V source is working properly; isolate coil 5430 and jumper 9044 and measure the +5V
2. ITT sound processor circuit is loading the +5V; isolate coil 5430
3. the main tuner, PIP tuner, or OSD circuitry is loading the +5V source; isolate jumper 9044
4. main tuner circuit is loading the +5V source; isolate coil 5100
5. OSD or PIP circuit is loading the +5V source; unplug the panel
6. PIP circuit is loading the +5V source; unplug J9Q2 (DW) or P07 (YC) on panel

Caution! Overriding the 5V protection when there is a 5V failure can increase the temperature in the set and may cause permanent damage to components. Do not override the 5V protection for a prolonged time.

Error 5 = Bimos software protection active (Bimos start-up register is corrupted or the I2C line to the Bimos is always low or no supply at pin 12 of the BiMOS). This error is usually detected during start-up and hence will prevent the set from starting up. Note that this error may also be reported as a result of error codes 1 or 2 (in that case the Bimos might not be the actual problem)

Error 6 = Bimos (TDA884X) I2C error. Note that this error may also be reported as a result of error codes 1 or 2 (in that case the Bimos might not be the actual problem)

Error 7 = General I2C error. This will occur in the following cases:

- SCL or SDA is shorted to ground
- SCL is shorted to SDA
- SDA or SCL connection at the micro controller is open circuit.

Error 8 = Microprocessor internal RAM error. The micro controller internal RAM test indicated an error of the micro controller internal memory (tested during start-up);

Error 9 = OSD generator I2C error (PCA8516). PCA8516 does not respond to the micro controller

Error 10 =NV memory I2C error. NV memory (EEPROM) does not respond to the micro controller

Error 11 = micro controller / NV Memory identification error. During the last start-up the NVM and the micro controller did not recognize each other (e.g. one of them was replaced), therefore the NVM was loaded with default values.

Error 12 =YUV IC I2C error (TDA9178). TDA9178 does not respond to the micro controller

Error 13 =Reserved

Error 14 =Sound processor I2C error (MSP34XX/TDA9855). Sound controller MSP3400, MSP3410 or TDA9855 does not respond to the micro controller

Error 15 =Reserved

Error 16 =PLL tuner I2C error. The PLL tuner does not respond to the micro controller

Error 17 =PIP processor I2C error (MC4446X). PIP processor MC4446x does not respond to the micro controller

Error 18 =2nd tuner I2C error. The 2nd tuner (PIP/DW) does not respond to the micro controller

Error 19 =Reserved

Error 20 =Reserved

Error 21 =Reserved

Error 22 =Reserved

Error codes 1,2, 4 and 5 are protection codes and in this case supplies of some circuits will be switched off. Also, in protection the LED will blink the number of times equivalent to the most recent error code.

5.3.3 Error code table

Table 5-1

Error code	Error description	Possible defective components
0	No error detected	-
1	X-ray protection / EW and/or Vert protection active	EW/Vertical circuit is defective
2	High beam protection active	CRT amplifier circuit or picture tube, or +200V is missing
3	Reserved	
4	5V protection active	+5V supply line is low or short circuit
5	BIMOS	s/w protection active or BIMOS register is corrupted IC7150
6	BIMOS I2C	error IC7150
7	General I2C bus error	I2C bus s/c or o/c on uP
8	Main uP Internal RAM error	IC7000
9	OSD generator I2C error	IC7101 on OSD panel
10	NVM I2C error	IC7088
11	NVM identification error	IC7088
12	Histogram I2C error	IC7770 on YUV interface panel
13	Reserved	
14	Sound processor I2C error	IC7430 (2CS/ Nicam) or IC7437 (BTSC)
15	Reserved	
16	Main tuner I2C error	U1125
17	PIP processor I2C error	IC7350 on PIP panel
18	2nd tuner PIP I2C error	U1126 or U1127 on PIP panel
19	Reserved	
20	Reserved	
21	Reserved	
22	Reserved	

5.4 The "blinking LED" procedure

The contents of the error buffer can also be made visible through the "blinking LED" procedure. This is especially useful when there is no picture. There are two methods:

1. When the SDM is entered, the LED will blink the number of times, equal to the value of the last (newest) error code (repeatedly).
2. With the DST all error codes in the error buffer can be made visible. Transmit the command:

"DIAGNOSE x OK" where x is the position in the error buffer to be made visible

x ranges from 1, (the last (actual) error) to 6 (the first error)

The LED will operate in the same way as in point 1, but now for the error code on position x.

Example:

Error code position1 2 3 4 5 6

Error buffer:8 9 5 0 0 0

- after entering SDM
- blink (8x) - pause - blink (8x) - etc.
- after transmitting "DIAGNOSE 2 OK" with the DST blink (9x) - pause - blink (9x) - etc.
- after transmitting "DIAGNOSE 3 OK" with the DST blink(5x) - pause - blink(5x) - etc.
- after transmitting "DIAGNOSE 4 OK" with the DST nothing happens

NOTE: If errors 1, 2, 4 or 5 occurs the LED ALWAYS blinks the last occurred error, even if the set in NOT in service mode.

5.5 Trouble shooting tips

In this paragraph some trouble shooting tips for the deflection and power supply circuitry are described. For detailed diagnostics, check the fault finding tree.

5.5.1 THE DEFLECTION CIRCUIT:

1. Measure the VBAT (140V) is present across 2917 (A1 POWER SUPPLY). If the voltage is not present, disconnect coil 5930 (A1 Power Supply) (whole horizontal deflection stage is disconnected). If the voltage is present then the problem might be caused by the deflection circuit. Possibilities:
   - Transistor 7620 is faulty
   - The driver circuit around transistor 7610 is faulty
   - No horizontal drive signal coming from the BIMOS 7150-D pin 40
2. Note: If the C and E of 7620 is shorted, hick-up noise can be heard from the power supply circuit.
3. To determine whether the fault is present in the horizontal deflection circuit (A2 HOR .DEFLECTION+LINE OUTPUT) or in the EW circuit/panel (screen size above 21"), desolder E61 pin 13 or M61 pin 13 (in this case the EW protection is disable) and insert jumpers into positionnumbers 9605 and 9614. If the basic deflection is working (picture is parabolic distorted), then the fault is located in the EW circuit/panel. If there is no hor. deflection, the fault is present in the basic deflection circuitry.
4. Also take note of protection circuits in the line output stage. If any of these circuits are activated, the set shutdown. Depending on protections, the LED will blink according to the fault defined. In order to determine which protection circuit is active, isolation of circuits is necessary. These protection circuits are:
   - High beam protection (LED blinks repetitively 2 times): see error code 2 explanation.

- Any of the following protection circuit is active, it will cause LED to blink repetitively 1 times. If this happen, isolate each circuit to determine the cause.; see error code 1.

5.5.2 THE POWER SUPPLY.

To trouble shoot the A8 SMPS, first check the +5V_STBY voltage on IC7907, pin 7. If this voltage is not present, check fuse 1906 and D6917. If 1906 or D6917 is not open circuit, the problem might be caused on the primary side of the switching supply. Check the output of the bridge diodes on the cathode side of D6931/D6903 pin 1 for approximately 300V DC. If this voltage is missing, check the bridge diodes and the fuse 1900 on the mains filter panel (H circuit). If fuse F1900 is found open, check IC7902 (circuit A1) between pins 3 and 2 to make sure that there is no short circuit present. If the 300V DC is present on pin 3 of IC7902, check for a startup voltage of 16V on pin 4 of IC7902. If no startup voltage is present, check if R3917 is open; a short circuit between pin 4 and 5 will also cause this problem. It is necessary to have a feedback signal from the hot secondary side of switch mode transformer T5912 at pin 8 and pin 9 for the power supply to oscillate. If this startup voltage is present on pin 4 of IC7902 and the supply is not oscillating, check R3959 and D6908.

The A8 powersupply has been designed with Over Voltage Protection (OVP). To determined whether OVP is active, check whether +5V standby is present at IC7907 pin 7. If not, check the components 1905, 6914, 6960, 3926 and 3920. If these components are O.K., then replace opto-coupler 7950.

Another way to confirm whether OVP is active is to measure the voltage with an oscilloscope at IC7902 pin 4. If the voltage is fluctuating between 11-14V, then check the components as described in the above mentioned paragraph.

5.6 Customer Service Mode (CSM)

All A8.0 sets are equipped with the "Customer Service Mode" (CSM). CSM is a special service mode that can be activated and deactivated by the customer, upon request of the service technician/dealer during a telephone conversation in order to identify the status of the set. This CSM is a 'read only' mode, therefore modifications in this mode are not possible.

Entering the Customer Service Mode.

The Customer Service Mode can be switched on by pressing simultaneously the button (MUTE) on the remote control and any key on the control buttons (P+, P-, VOL +, VOL -) on the TV for at least 4 seconds.

When the CSM is activated:

- picture and sound settings are set to nominal levels
- modes that interfere with the behaviour of the set are switched off (sleep timer, auto standby, etc.)

Exit the Customer Service Mode.

The Customer Service Mode will switch off after:

- pressing any key on the remote control handset (except "P+" or "P-")
- switching off the TV set with the mains switch.

All settings that were changed at activation of CSM are set back to the initial values

5.6.1 The Customer Service Mode information screen

After switching on the Customer Service Mode the following screen will appear.

CSM Menu

```
1  nnnn  AAABBC-X.Y  DDDD-E-FF      CSM

2  CODES  nn  nn  nn  nn  nn  nn
3  OP   nnn  nnn  nnn  nnn  nnn  nnn  nnn
4  SYS       HOSP
5  SLEEP     NOT TUNED
6  LOCK      SKIPPED
7  TIMER
```

CL 86532036_002.ai 260598

Figure 5-3 Customer Service Mode screen

The Customer Service Menu shows the following information:

- "nnnnn" displayed on line 1

Hexadecimal counter of operating hours. Standby hours are not counted as operating hours.

- "A80BBC-X.Y" displayed on line 1

Software identification of the main micro controller. See paragraph 5.2. Details on available software versions can be found in the chapter "Software Survey" of the publication "Product Survey - Colour Television".

- "CODES xx xx xx xx xx xx" displayed on line 2

Error code buffer (see paragraph 5.3). Displays the last 6 errors of the error code buffer. As soon as the built-in diagnosis software has detected an error the buffer is adapted. The latest (=newest) error is displayed on the leftmost position. Each error code is displayed as a 1 or 2 digit number. When less than 6 errors occur, the rest of the position(s) is(are) displayed as '0'. See paragraph 5.3 of this chapter for a detailed description of the error codes.

- "OP xxx xxx xxx xxx xxx xxx xxx" displayed on line 3

Option bytes. Software and hardware functionality of the A8.0 is controlled by option bits. An option byte or option number represents 8 of those bits. Each option number is displayed as a decimal number between 0 and 255. The set may not work correctly when an incorrect option code is set. See chapter 8 for more information on correct option settings

- "SYS XXXXX" displayed on line 4

Indicates which colour and sound system is installed for this preset:

- AUTO
- PAL BG
- PAL I
- PAL DK
- SECAM DK
- NTSC-M

Complaints that may be caused by an incorrect system setting:

- no colours
- colours not correct
- unstable picture
- noise in picture
- distorted sound / no sound

To change the system setting of a preset:

- press the "MENU" button on the remote control
- select the INSTALL sub menu
- select the MANUAL STORE sub menu
- select and change the SYSTEM setting until picture and sound are correct
- select the STORE menu item

"HOSP" displayed on line 4 of the CSM menu. Indicates that the "hospitality" mode is enabled. Complaints that may be caused by the activation of "hospitality mode":

- "HOSPITALITY ON" displayed on TV screen
- Installation menu does not work
- Personal presets are not automatically stored
- Volume level cannot be increased above a certain level
- Some channels/presets are blanked (only audio)

To switch off the hospitality mode:

- go to preset 38
- press the"OSD" and "MENU" buttons on the local keyboard simultaneously for 3 seconds

- "SLEEP" displayed on line 5 of the CSM screen

Indicates that the sleep timer is running. Complaints that may be caused by the activation of the sleep timer:

- set displays "GOOD BYE" and switches to standby

To switch off the sleep timer:

- press the top left button on the remote control until repeatedly until "SLEEP 0" is displayed in the middle of the screen.

- "NOT TUNED" on line 5 of the CSM screen.

Indicates that the set is not receiving an "ident" signal on this channel / preset. Situations which can will result in the display of "NOT TUNED":

- no or bad antenna signal; connect a proper antenna signal
- antenna not connected; connect the antenna
- no channel / preset is stored at this program number; go to the INSTALL menu and store a proper channel at this program number
- the tuner is faulty (in this case the CODES line will contain number 16); check the tuner and replace/repair if necessary

Note: On some models, BLUE MUTE is displayed (if the BM option is ON) when no signal is received.

- "LOCK" on line 6 of the CSM screen

On Pal/Multi sets:

Indicates that all channels are locked except the selected channel. Complaint that may be caused by locked channels:

- TV cannot be switched on from standby with the local keyboard buttons
- "P+" and "P-" buttons on local keyboard do not function

To disable the LOCK feature:

1. select "FEATURE" menu (with the Remote Control)
2. select "LOCK" (with the RC)
3. set to "OFF"

On NTSC sets:

Indicates if the channel is blocked via the parental or smart lock. To switch off the parental lock

1. select the blocked channel
2. give in the 4 digit access code

To change the parental code when the code is "lost":

1. select "FEATURE" menu
2. select "PARENTAL LOCK"
3. select "SETUP CODE"
4. key in "0711"
5. key in "0711" again

The parental code is now 0711.

- "SKIPPED" displayed on line 6 of the CSM screen.

Indicates that at least one channel is deleted as a preferred channels (by default, all channels are skipped. Note that "SKIPPED" will always be displayed in CSM unless all the channels are not skipped. A channel can be added as a selected channel to the list of preferred channels:

1. select "INSTALL" menu
2. select "CHANNEL EDIT"
3. select "ADD/DELETE"
4. set to "ADD" with the left/right cursor keys

- "TIMER" displayed on line 7 of the CSM screen.

Indicates that the on/off timer is running. Complaints that may be caused by the activation of the sleep timer;

- Without using the remote control of the local keybpard the set is switching:
  - on from standby:
  - to a different channel

To switch off the activation timer:

- select "TIMER" in the "FEATURE" menu
- select "ACTIVATE' in the "TIMER" menu
- set to "OFF" with the left/right cursor keys

5.6.2 *Solving other problems*

TV switched off or changed channel without any user action. Set switches off after "TV SWITCHING OFF" was displayed. Auto standby switched the set off because:

- there was no ident signal > 15 minutes
- there was no remote control signal received or local key pressed for > 2 hours

See chapter 8 for a description on the options to enable/disable auto standby

Picture problems. Picture too dark or too bright

- Press "Smart Picture" button on the remote control. In case the picture improves, increase / decrease the brightness

value or increase / decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes
- After switching on the Customer Service Mode the picture is OK. Increase / decrease the brightness value or increase / decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes

White line around picture elements and text

- press "Smart Picture" button on the remote control. In case the picture improves, decrease the sharpness value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the sharpness value. The new "Personal Preference" value is automatically stored after 3 minutes

Snowy picture

- check the "NOT TUNED" section of the Customer Service Mode screen

Snowy picture and/or unstable picture

- a scrambled or decoded signal is received

Black and white picture

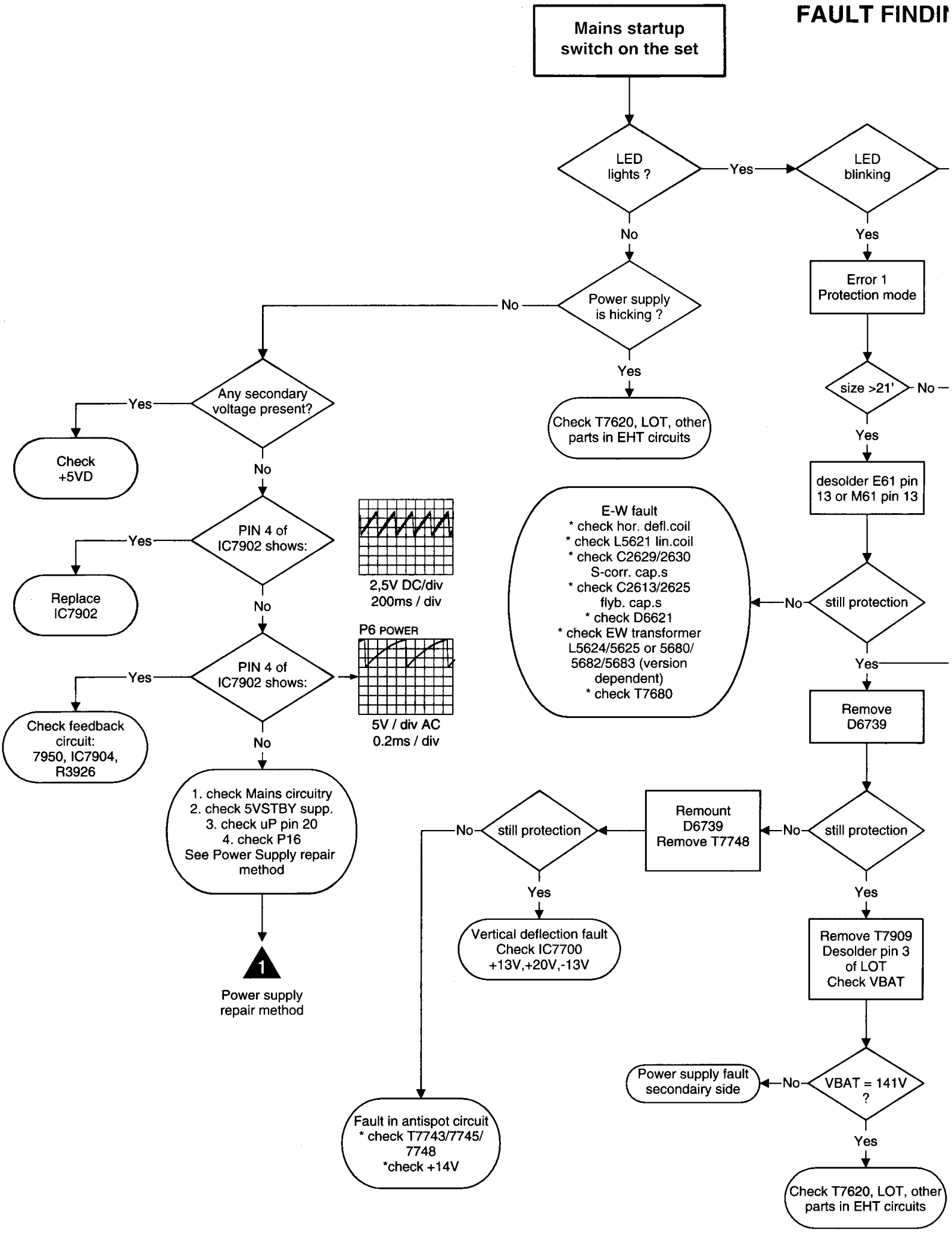
- press "Smart Picture" button on the remote control. In case picture improves, increase the colour value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Increase the colour value. The new "Personal Preference" value is automatically stored after 3 minutes

Menu text not sharp enough

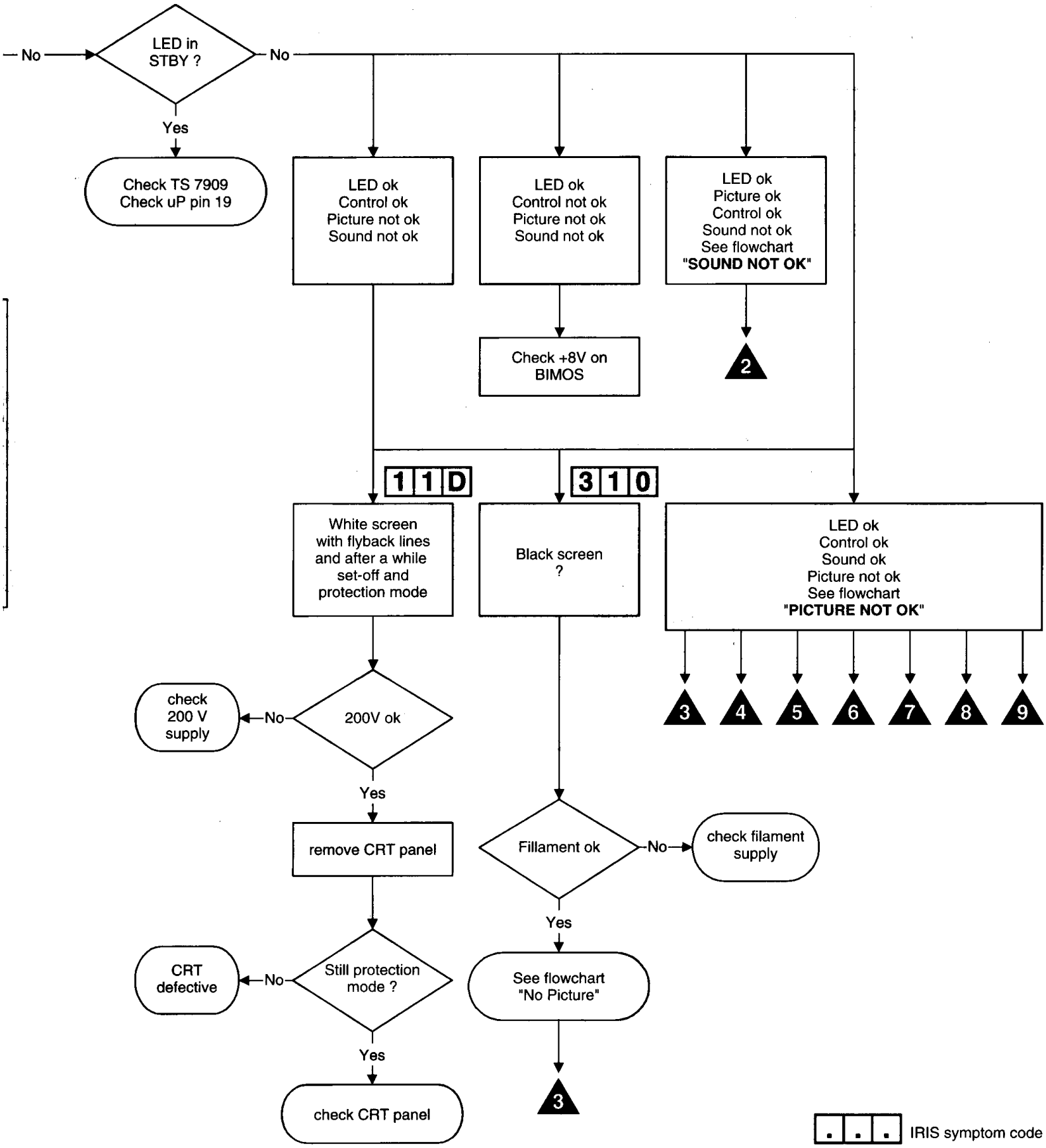
- press "Smart Picture" button on the remote control. In case the picture improves, decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes
- after switching on the Customer Service Mode the picture is OK. Decrease the contrast value. The new "Personal Preference" value is automatically stored after 3 minutes

Sound problems.
No sound or sound too loud (after channel change / switching on)

- after switching on the Customer Service Mode the volume is OK. Increase / decrease the volume level. The new "Personal Preference" value is automatically stored after 3 minutes

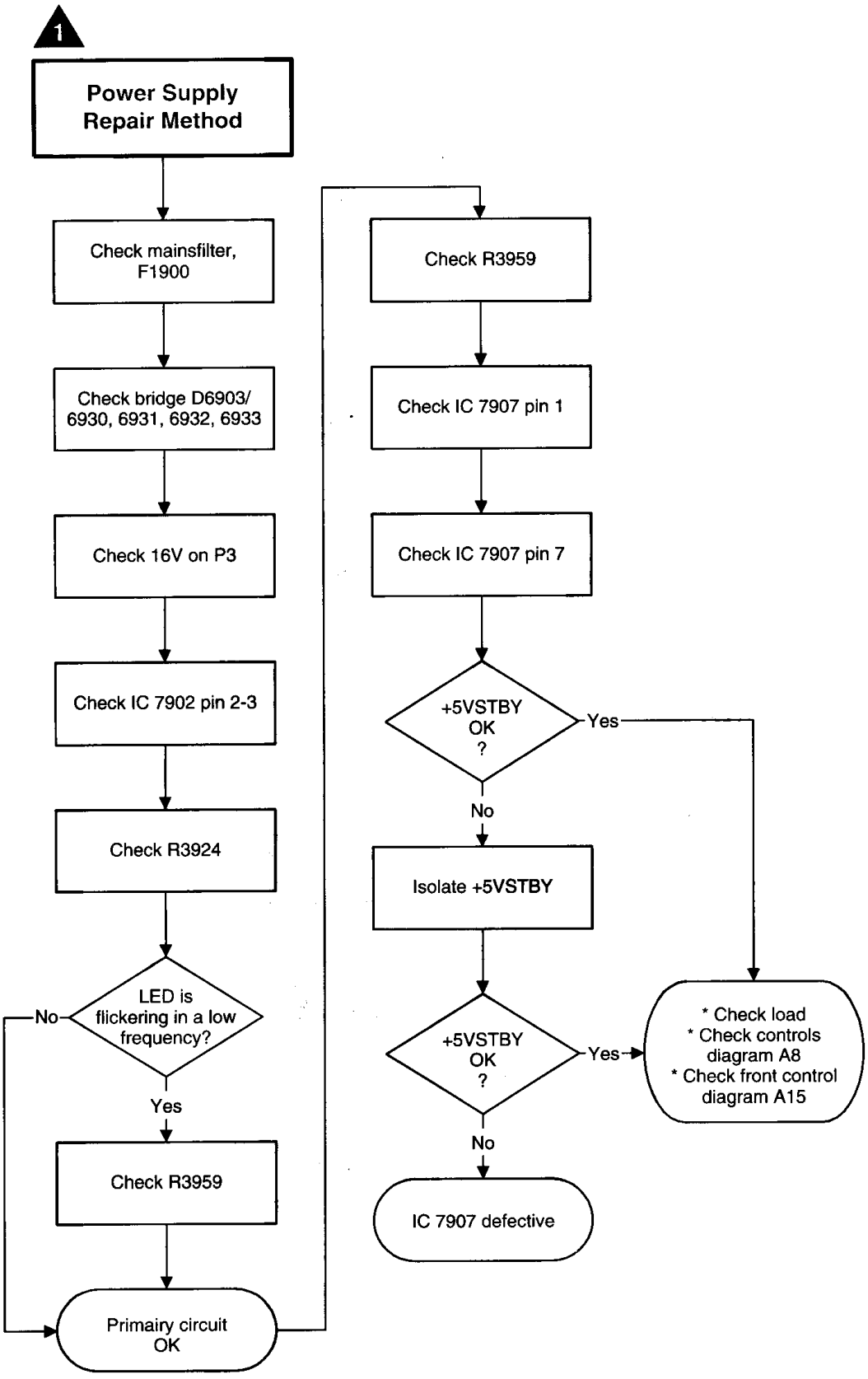

FAULT FINDI
Mains startup switch on the set
LED lights ?
Yes
LED blinking
No
Yes
Power supply is hicking ?
Error 1 Protection mode
No
Yes
size >21'
No
Yes
Check T7620, LOT, other parts in EHT circuits
desolder E61 pin 13 or M61 pin 13
Any secondary voltage present?
Yes
Check +5VD
No
E-W fault
* check hor. defl.coil
* check L5621 lin.coil
* check C2629/2630 S-corr. cap.s
* check C2613/2625 flyb. cap.s
* check D6621
* check EW transformer L5624/5625 or 5680/ 5682/5683 (version dependent)
* check T7680
No
still protection
Yes
PIN 4 of IC7902 shows:
Yes
Replace IC7902
No
2,5V DC/div
200ms / div
P6 POWER
PIN 4 of IC7902 shows:
Yes
Check feedback circuit: 7950, IC7904, R3926
No
5V / div AC
0.2ms / div
Remove D6739
1. check Mains circuitry
2. check 5VSTBY supp.
3. check uP pin 20
4. check P16
See Power Supply repair method
Remount D6739
Remove T7748
No
still protection
No
still protection
Yes
Yes
Vertical deflection fault
Check IC7700
+13V,+20V,-13V
Remove T7909
Desolder pin 3 of LOT
Check VBAT
1
Power supply repair method
Power supply fault secondairy side
No
VBAT = 141V ?
Fault in antispot circuit
* check T7743/7745/ 7748
*check +14V
Yes
Check T7620, LOT, other parts in EHT circuits

NG TREE LSP A8 CHASSIS

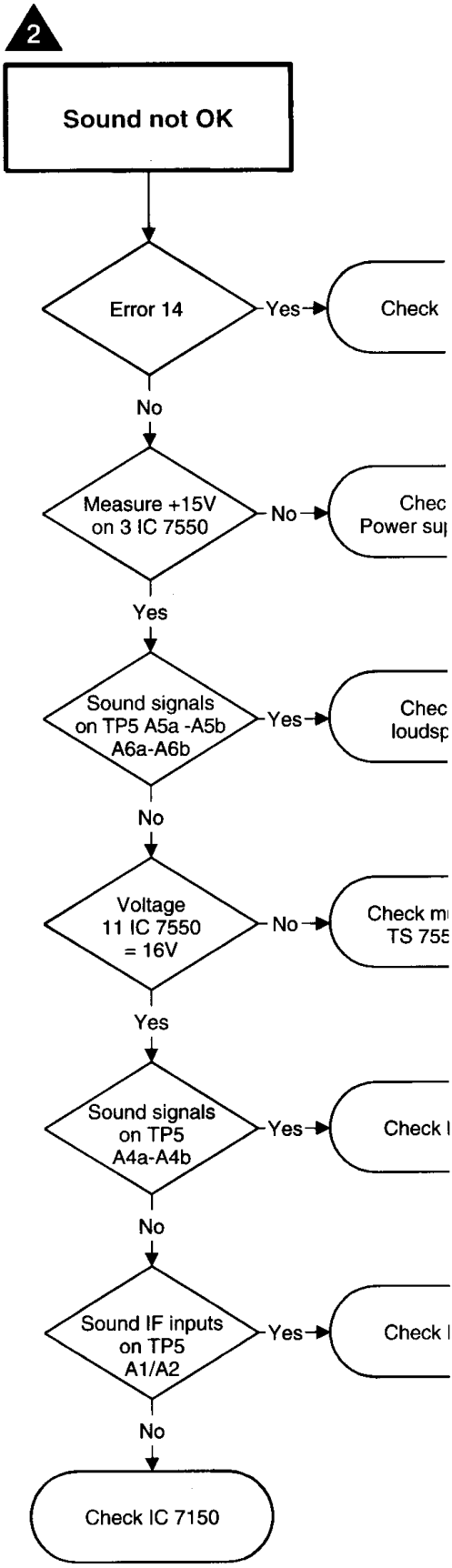


CL 86532034_006.AI
120698

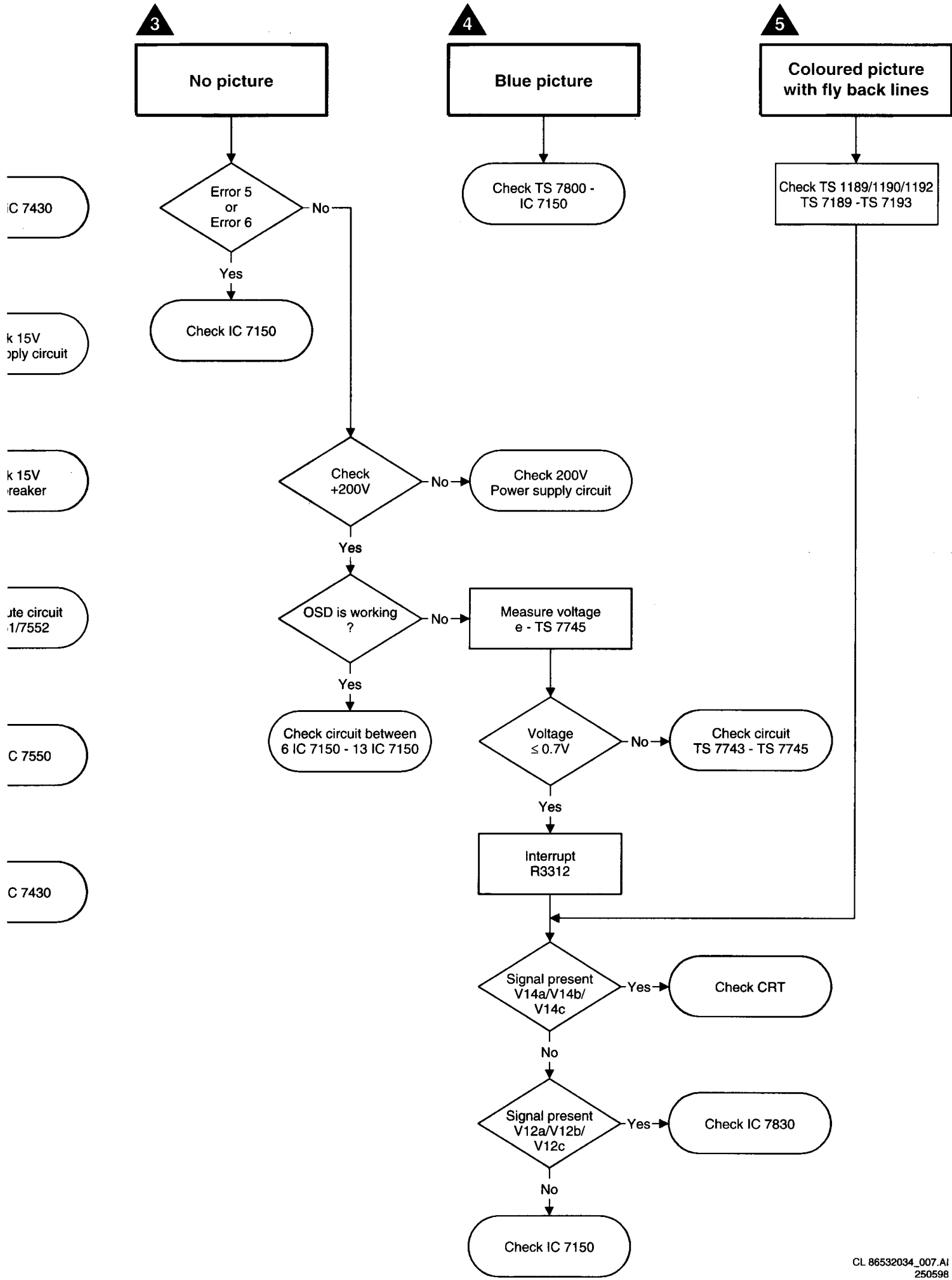
POWER SUPPLY REPAIR METHOD



SOUND NOT OK

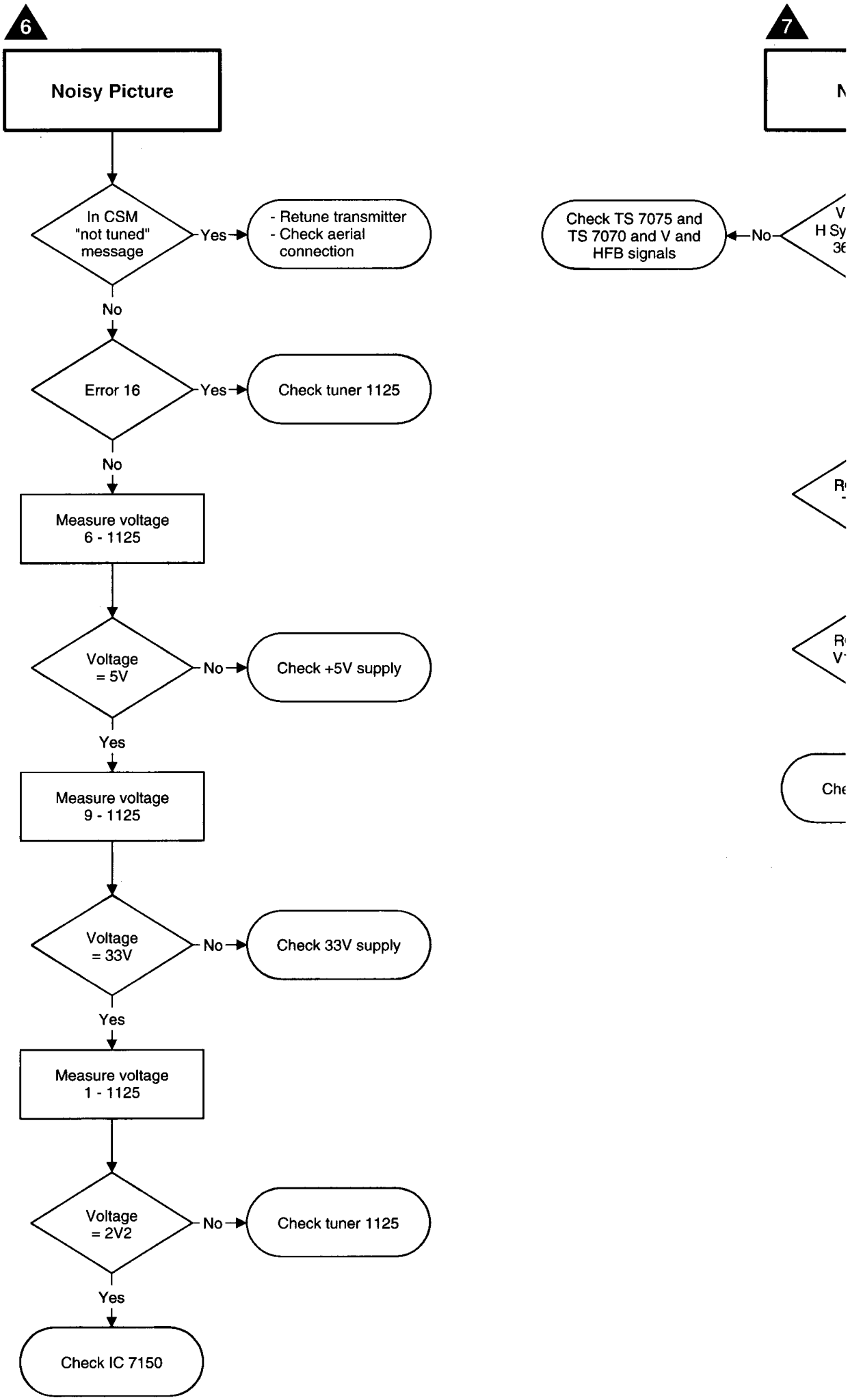


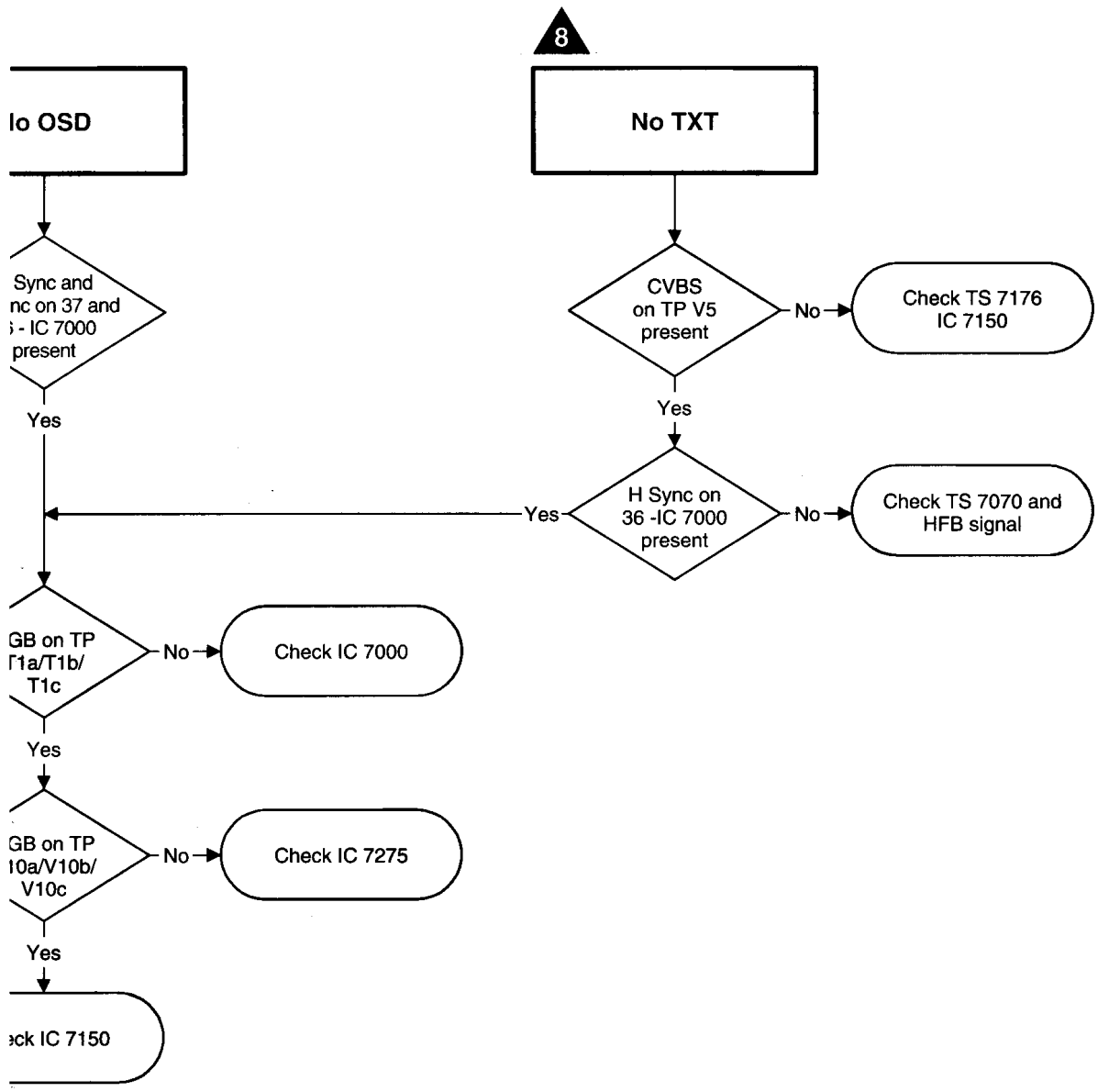
PICTURE NOT OK



CL 86532034_007.AI
250598

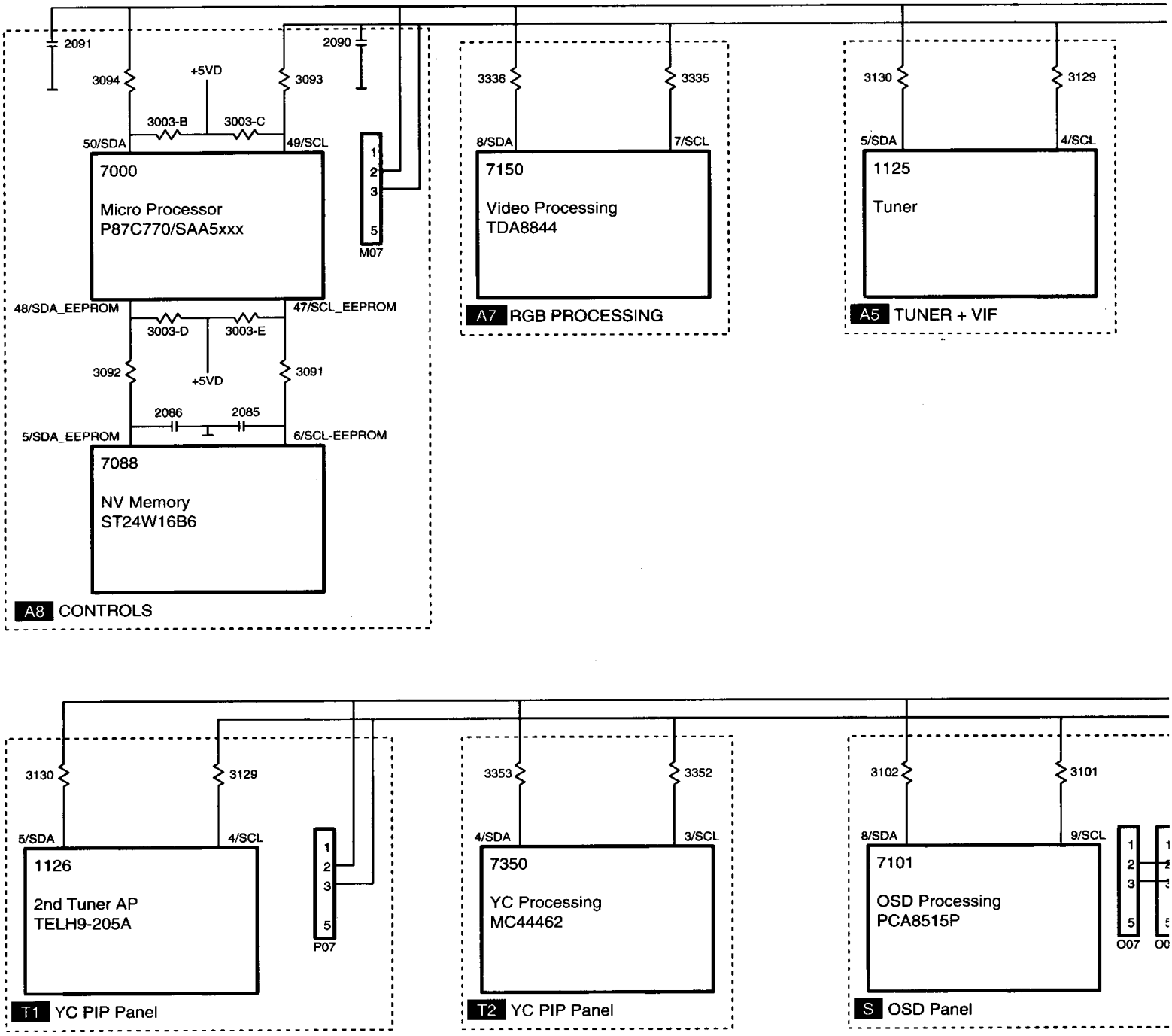
PICTURE NOT OK

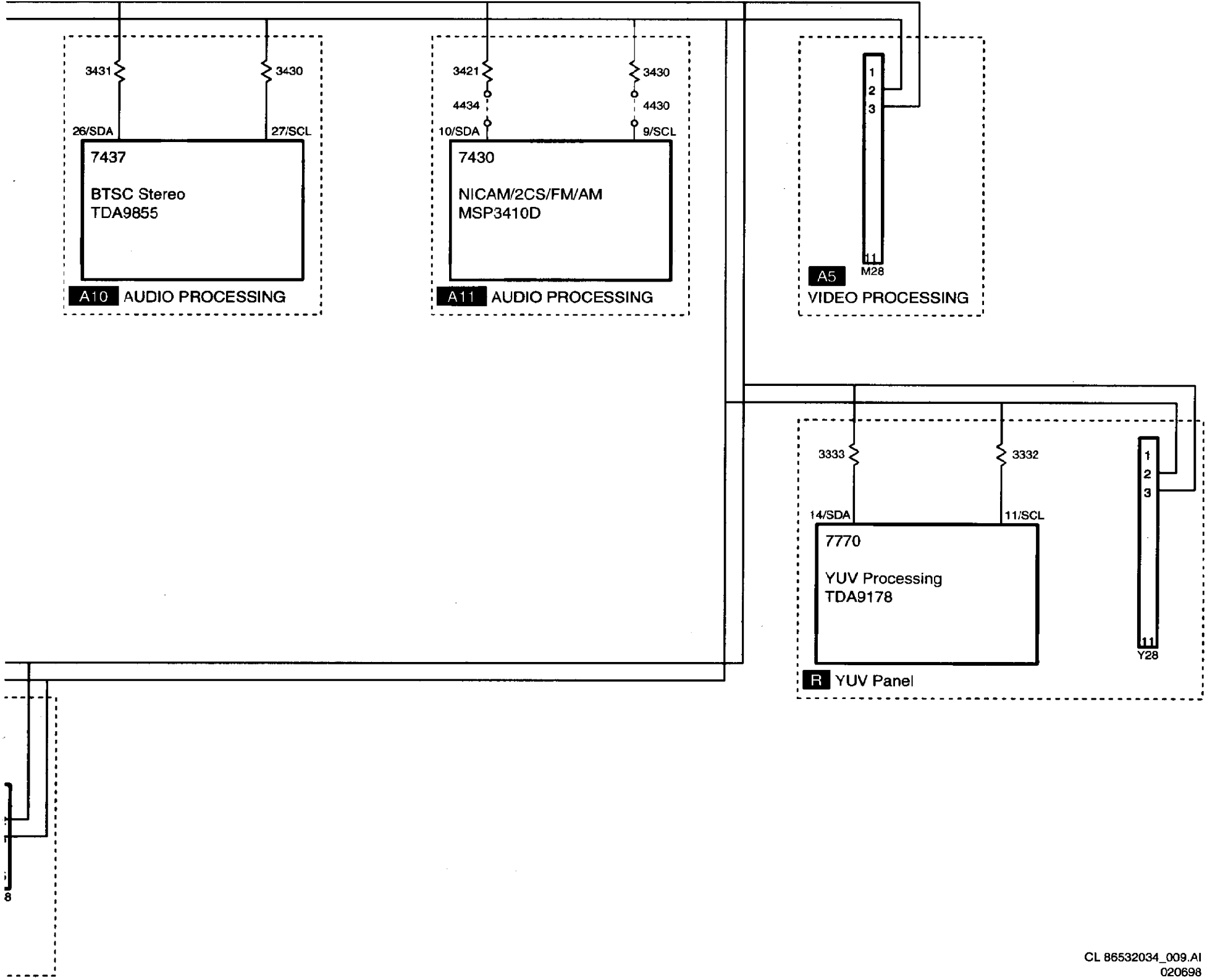




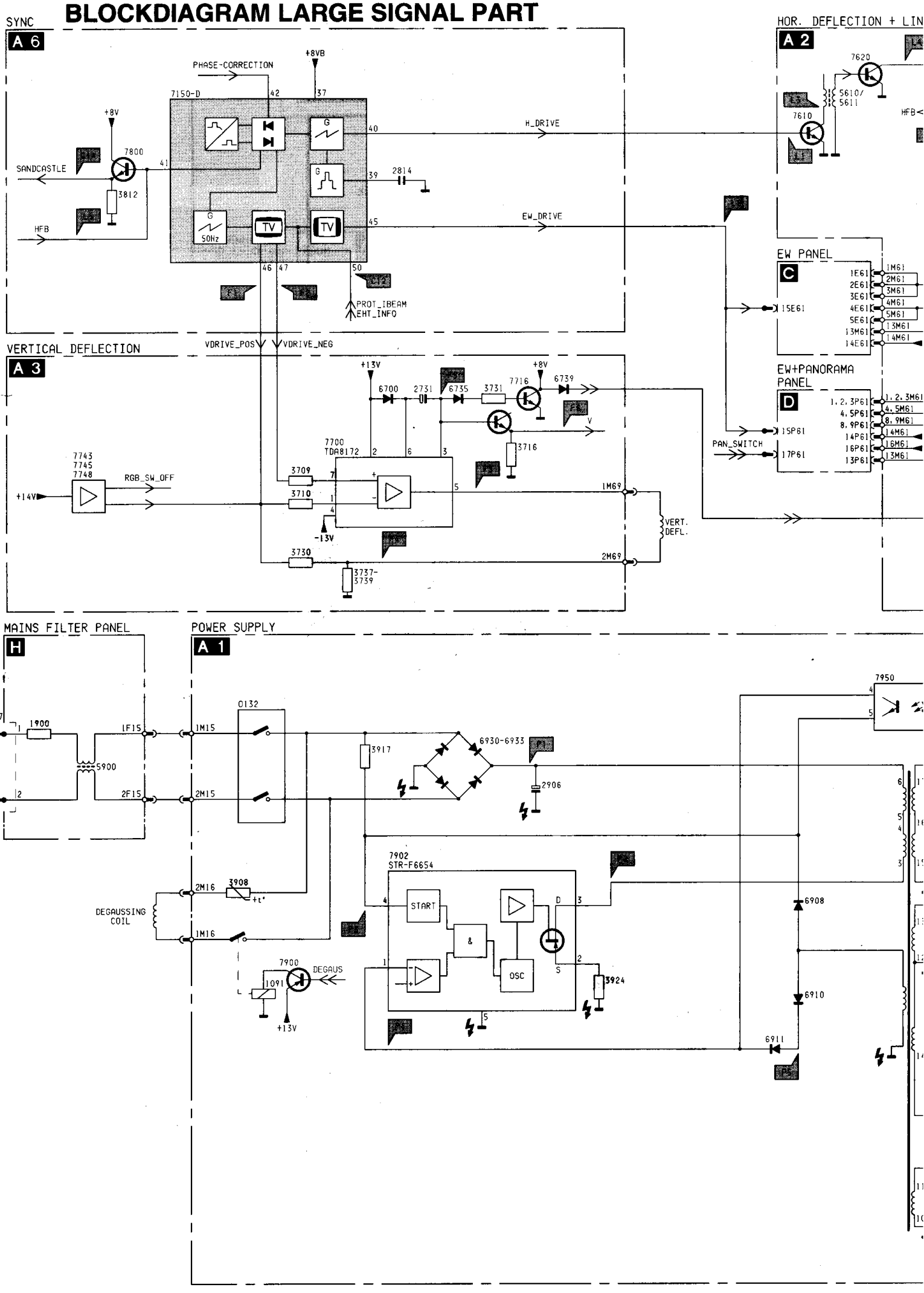
CL 86532034_008.eps
240698

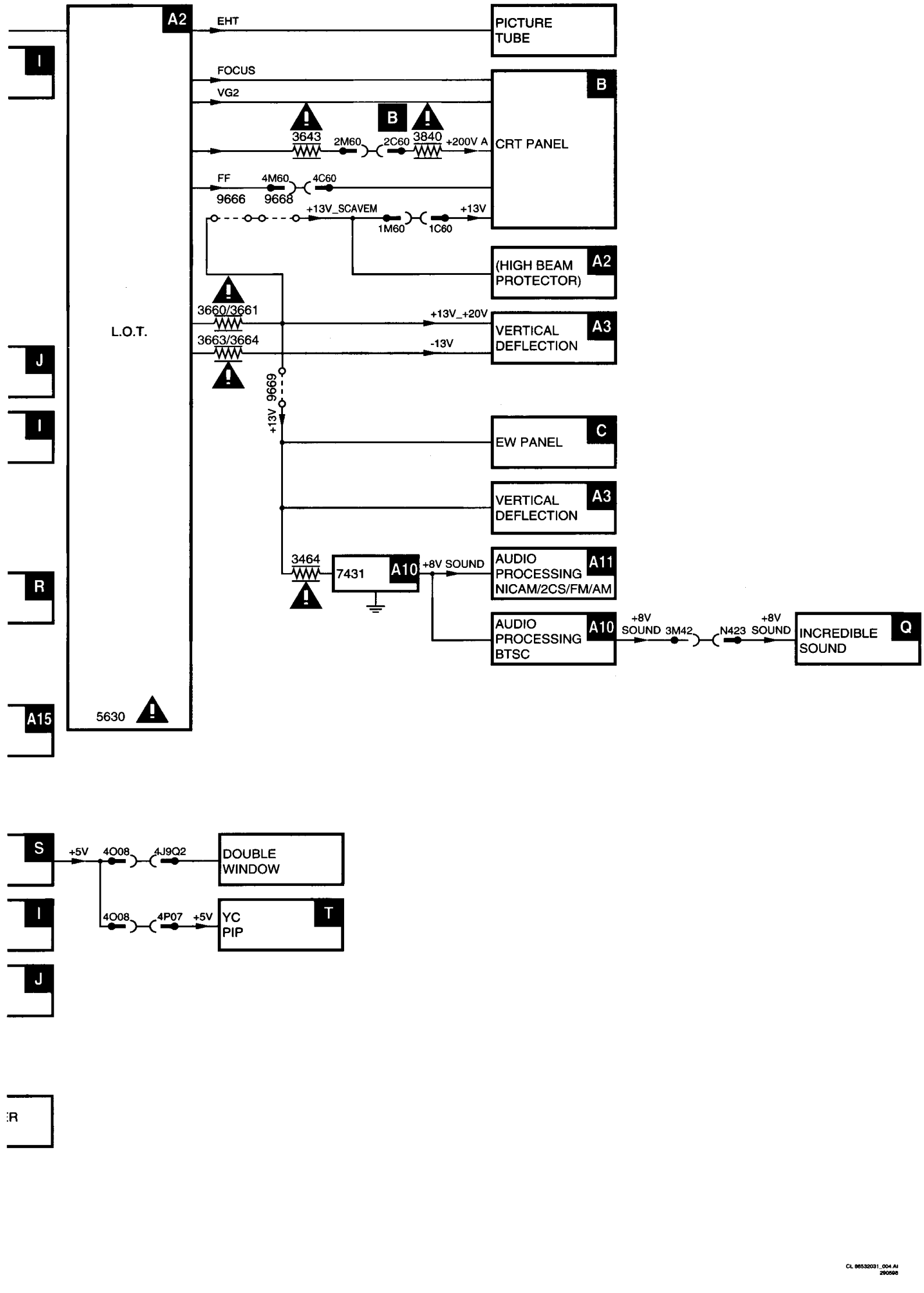
IIC Diagram


2091
2090
3094
+5VD
3093
3003-B
3003-C
50/SDA
49/SCL
7000
Micro Processor
P87C770/SAA5xxx
M07
48/SDA_EEPROM
47/SCL_EEPROM
3003-D
3003-E
3092
+5VD
3091
2086
2085
5/SDA_EEPROM
6/SCL-EEPROM
7088
NV Memory
ST24W16B6
A8 CONTROLS
3336
3335
8/SDA
7/SCL
7150
Video Processing
TDA8844
A7 RGB PROCESSING
3130
3129
5/SDA
4/SCL
1125
Tuner
A5 TUNER + VIF
3130
3129
5/SDA
4/SCL
1126
2nd Tuner AP
TELH9-205A
P07
T1 YC PIP Panel
3353
3352
4/SDA
3/SCL
7350
YC Processing
MC44462
T2 YC PIP Panel
3102
3101
8/SDA
9/SCL
7101
OSD Processing
PCA8515P
O07
S OSD Panel

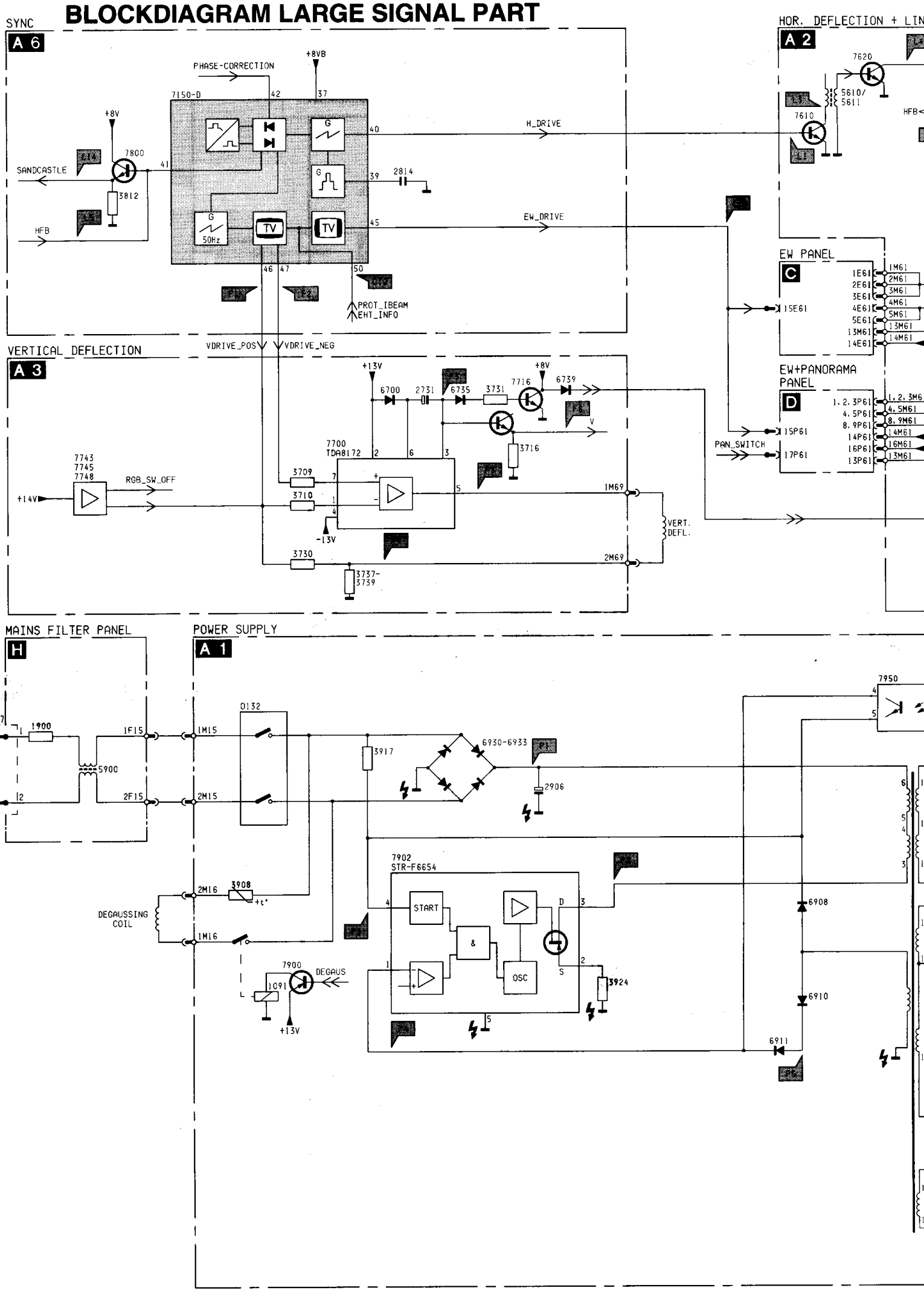

3431
3430
26/SDA
27/SCL
7437
BTSC Stereo
TDA9855
A10 AUDIO PROCESSING
3421
3430
4434
4430
10/SDA
9/SCL
7430
NICAM/2CS/FM/AM
MSP3410D
A11 AUDIO PROCESSING
1
2
3
11
M28
A5
VIDEO PROCESSING
3333
3332
14/SDA
11/SCL
7770
YUV Processing
TDA9178
1
2
3
11
Y28
R YUV Panel
8
CL 86532034_009.AI
020698

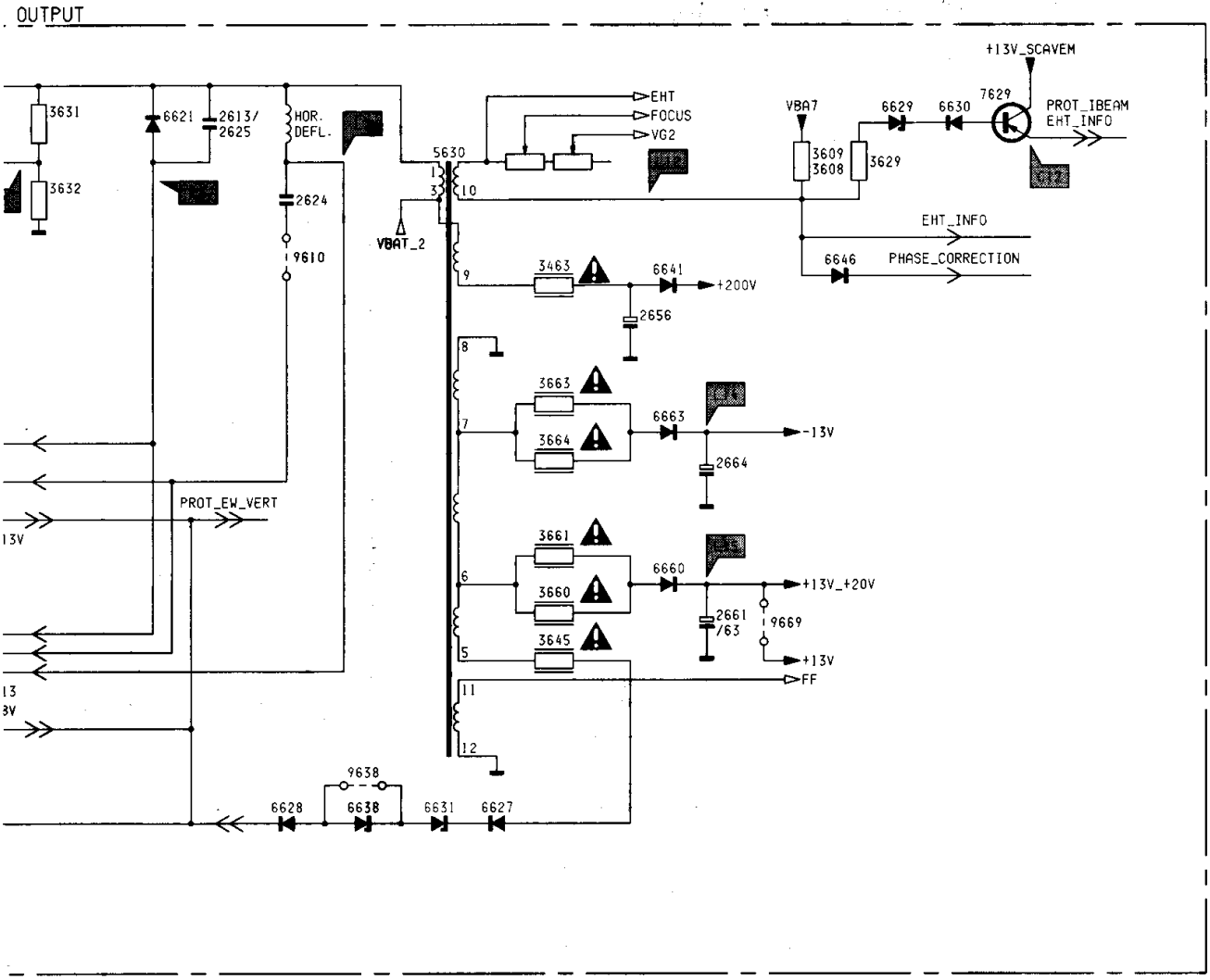
BLOCKDIAGRAM LARGE SIGNAL PART

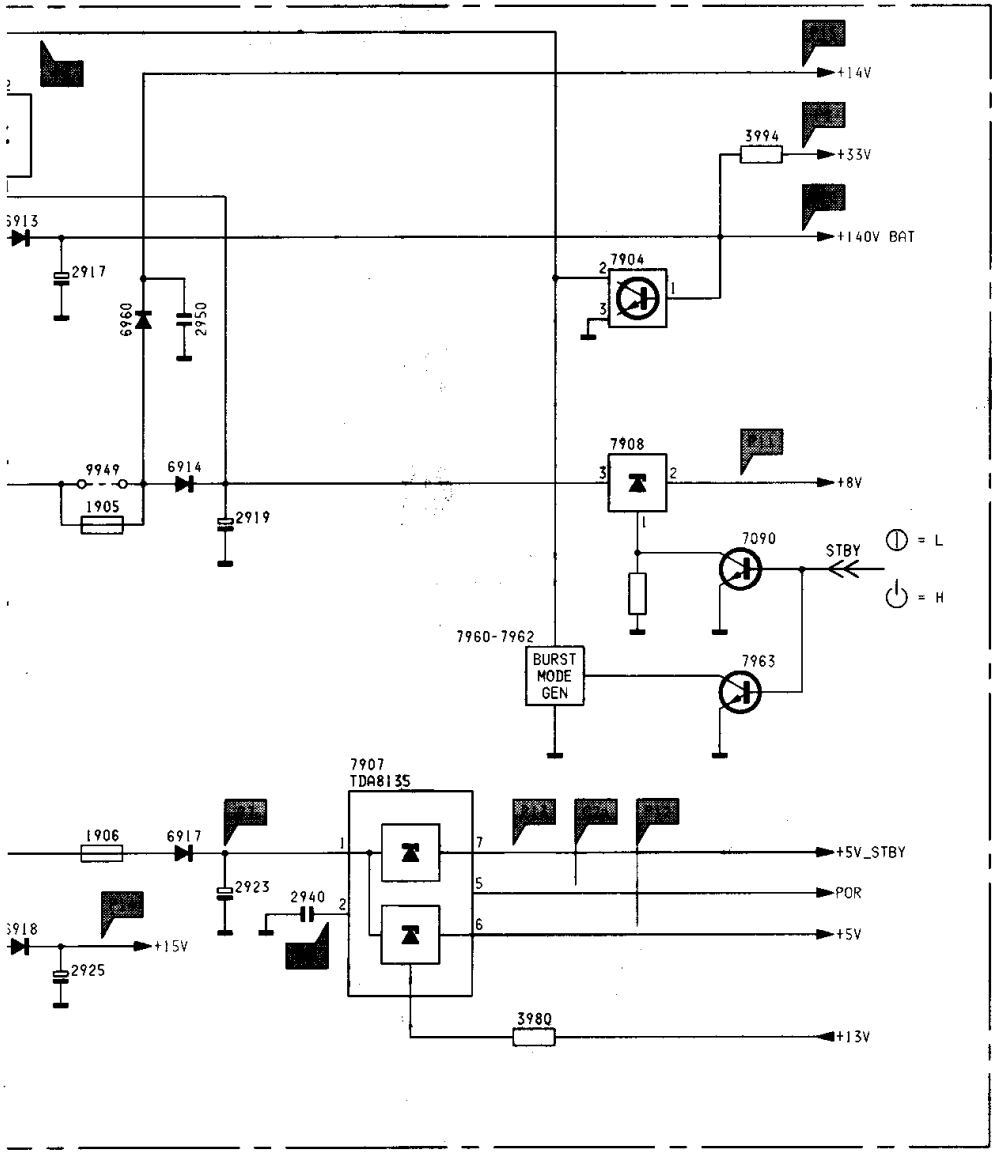



A2
EHT
PICTURE TUBE
I
FOCUS
VG2
B
3643
2M60
2C60
3840
+200V A
CRT PANEL
FF
4M60
4C60
9666
9668
+13V_SCAVEM
+13V
1M60
1C60
(HIGH BEAM PROTECTOR)
A2
3660/3661
+13V_+20V
L.O.T.
VERTICAL DEFLECTION
A3
3663/3664
-13V
J
+13V 9669
I
EW PANEL
C
VERTICAL DEFLECTION
A3
3464
7431
A10
+8V SOUND
AUDIO PROCESSING NICAM/2CS/FM/AM
A11
R
AUDIO PROCESSING BTSC
A10
+8V SOUND
3M42
N423
+8V SOUND
INCREDIBLE SOUND
Q
A15
5630
S
+5V
4O08
4J9Q2
DOUBLE WINDOW
I
4O08
4P07
+5V
YC PIP
T
J
:R

BLOCKDIAGRAM LARGE SIGNAL PART



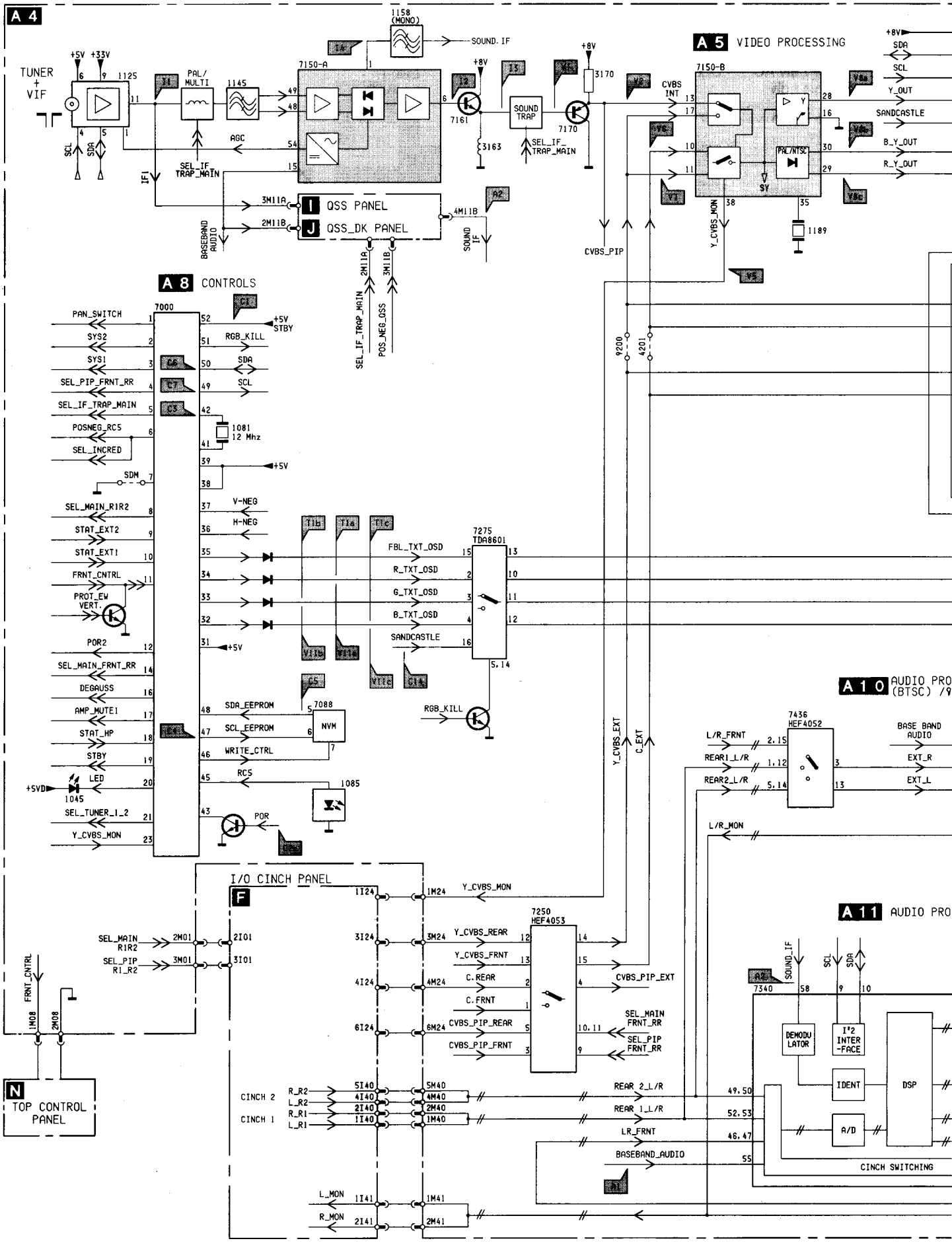


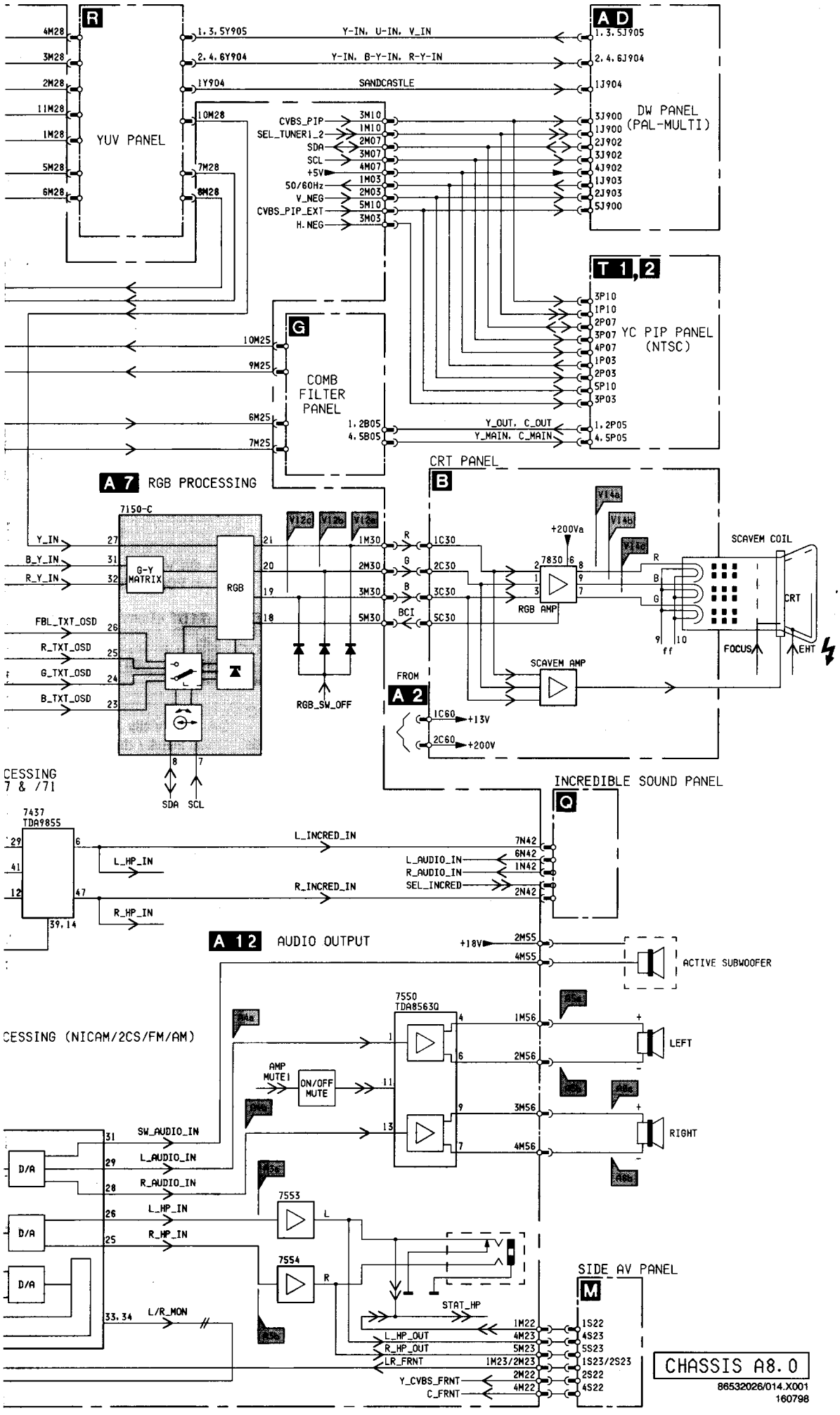


CHASSIS A8.0

86532026/012,X001
160798

BLOCKDIAGRAM SMALL SIGNAL PART

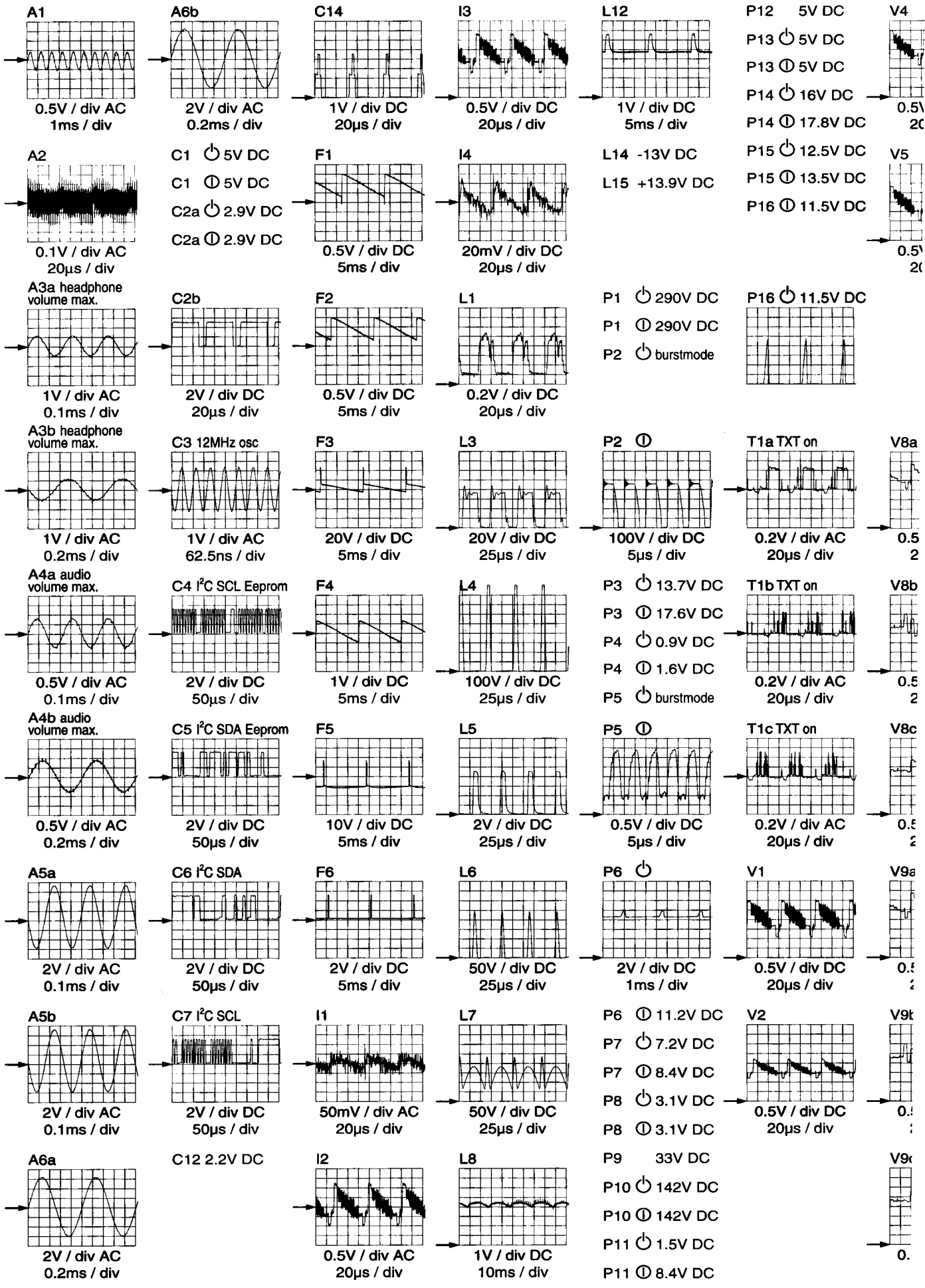


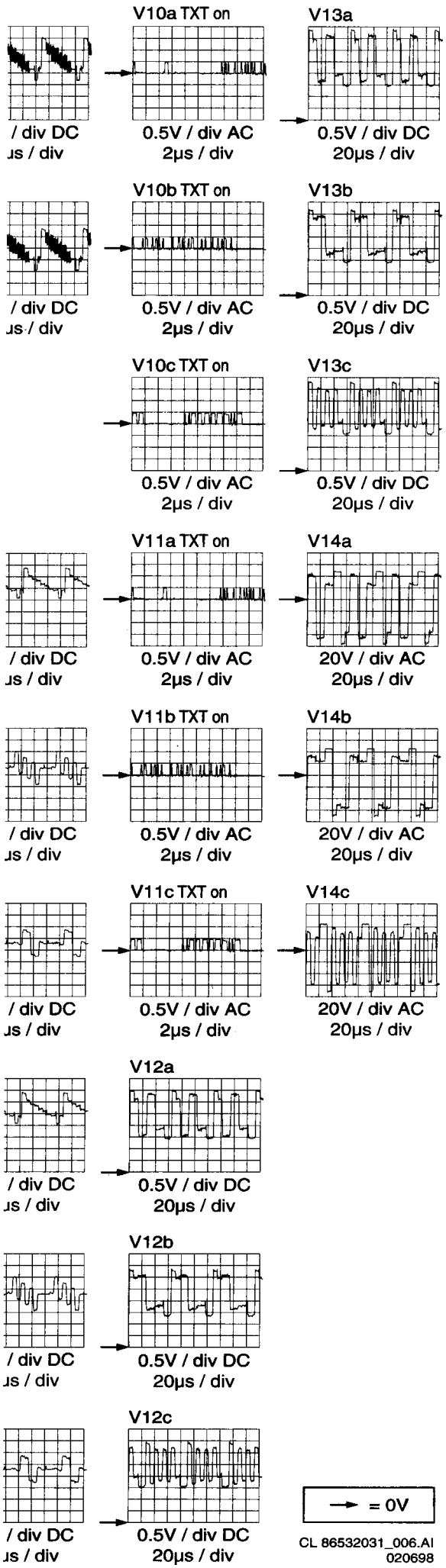


CHASSIS A8.0

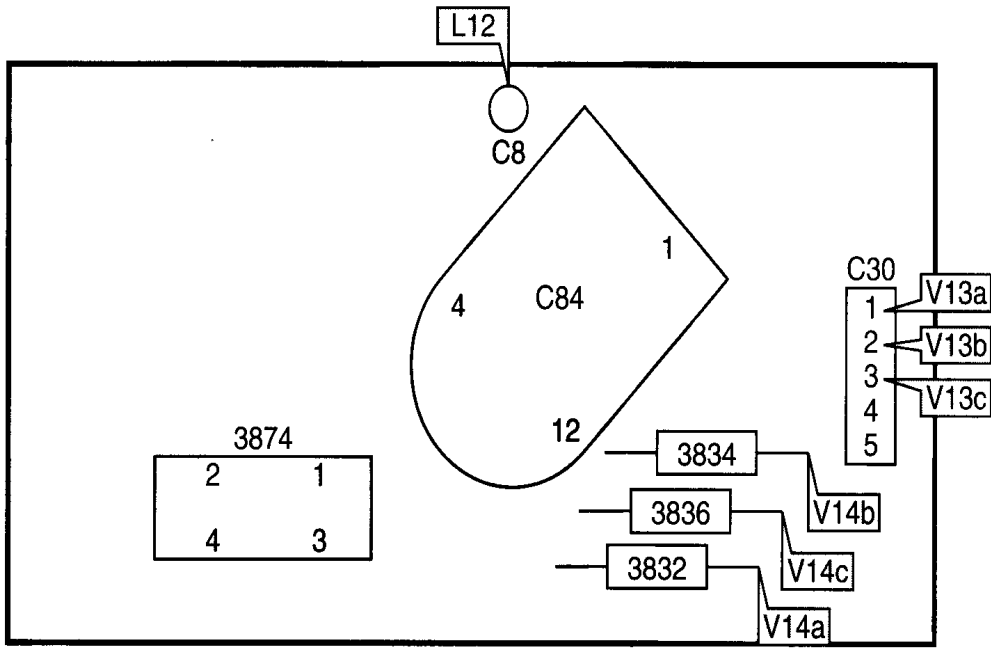
86532026/014.X001

160798

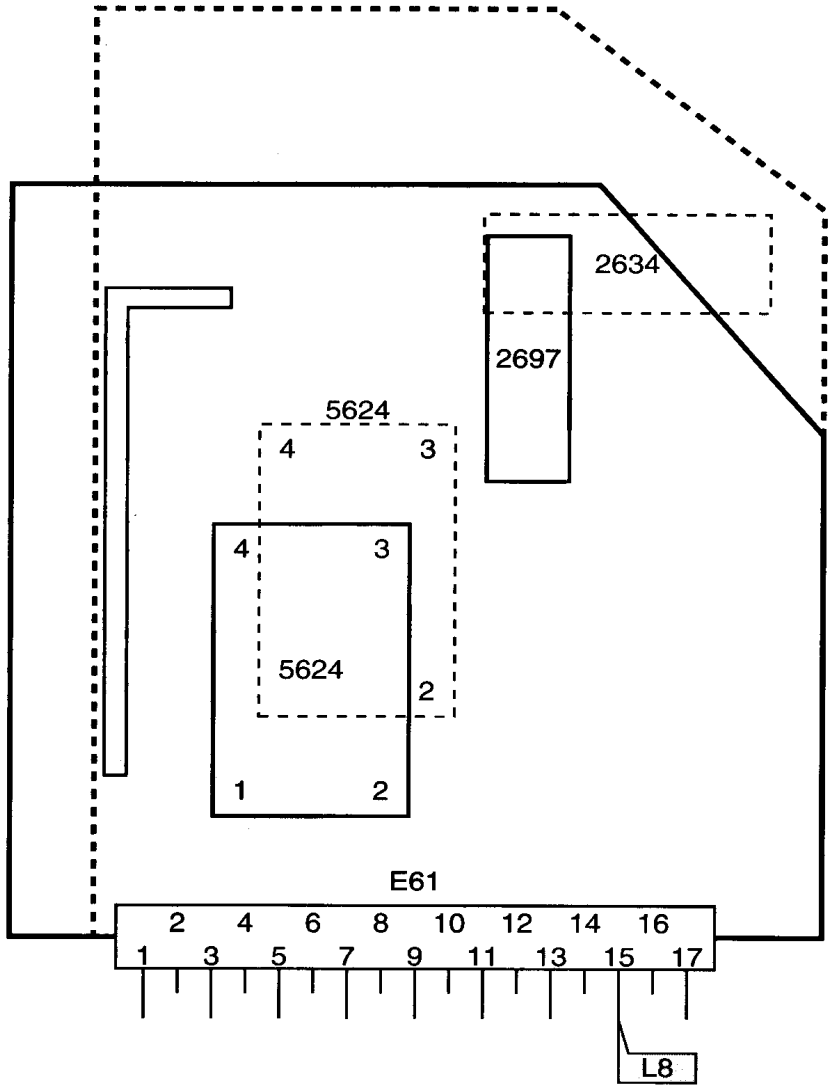

A1
0.5V / div AC
1ms / div
A6b
2V / div AC
0.2ms / div
C14
1V / div DC
20µs / div
I3
0.5V / div DC
20µs / div
L12
1V / div DC
5ms / div
P12 5V DC
P13 ⏻ 5V DC
P13 ⓘ 5V DC
P14 ⏻ 16V DC
P14 ⓘ 17.8V DC
P15 ⏻ 12.5V DC
P15 ⓘ 13.5V DC
P16 ⓘ 11.5V DC
V4
A2
0.1V / div AC
20µs / div
C1 ⏻ 5V DC
C1 ⓘ 5V DC
C2a ⏻ 2.9V DC
C2a ⓘ 2.9V DC
F1
0.5V / div DC
5ms / div
I4
20mV / div DC
20µs / div
L14 -13V DC
L15 +13.9V DC
V5
A3a headphone volume max.
1V / div AC
0.1ms / div
C2b
2V / div DC
20µs / div
F2
0.5V / div DC
5ms / div
L1
0.2V / div DC
20µs / div
P1 ⏻ 290V DC
P1 ⓘ 290V DC
P2 ⏻ burstmode
P16 ⏻ 11.5V DC
A3b headphone volume max.
1V / div AC
0.2ms / div
C3 12MHz osc
1V / div AC
62.5ns / div
F3
20V / div DC
5ms / div
L3
20V / div DC
25µs / div
P2 ⓘ
100V / div DC
5µs / div
T1a TXT on
0.2V / div AC
20µs / div
V8a
A4a audio volume max.
0.5V / div AC
0.1ms / div
C4 I²C SCL Eeprom
2V / div DC
50µs / div
F4
1V / div DC
5ms / div
L4
100V / div DC
25µs / div
P3 ⏻ 13.7V DC
P3 ⓘ 17.6V DC
P4 ⏻ 0.9V DC
P4 ⓘ 1.6V DC
P5 ⏻ burstmode
T1b TXT on
0.2V / div AC
20µs / div
V8b
A4b audio volume max.
0.5V / div AC
0.2ms / div
C5 I²C SDA Eeprom
2V / div DC
50µs / div
F5
10V / div DC
5ms / div
L5
2V / div DC
25µs / div
P5 ⓘ
0.5V / div DC
5µs / div
T1c TXT on
0.2V / div AC
20µs / div
V8c
A5a
2V / div AC
0.1ms / div
C6 I²C SDA
2V / div DC
50µs / div
F6
2V / div DC
5ms / div
L6
50V / div DC
25µs / div
P6 ⏻
2V / div DC
1ms / div
V1
0.5V / div DC
20µs / div
V9a
A5b
2V / div AC
0.1ms / div
C7 I²C SCL
2V / div DC
50µs / div
I1
50mV / div AC
20µs / div
L7
50V / div DC
25µs / div
P6 ⓘ 11.2V DC
P7 ⏻ 7.2V DC
P7 ⓘ 8.4V DC
P8 ⏻ 3.1V DC
P8 ⓘ 3.1V DC
V2
0.5V / div DC
20µs / div
V9b
A6a
2V / div AC
0.2ms / div
C12 2.2V DC
I2
0.5V / div AC
20µs / div
L8
1V / div DC
10ms / div
P9 33V DC
P10 ⏻ 142V DC
P10 ⓘ 142V DC
P11 ⏻ 1.5V DC
P11 ⓘ 8.4V DC
V9c



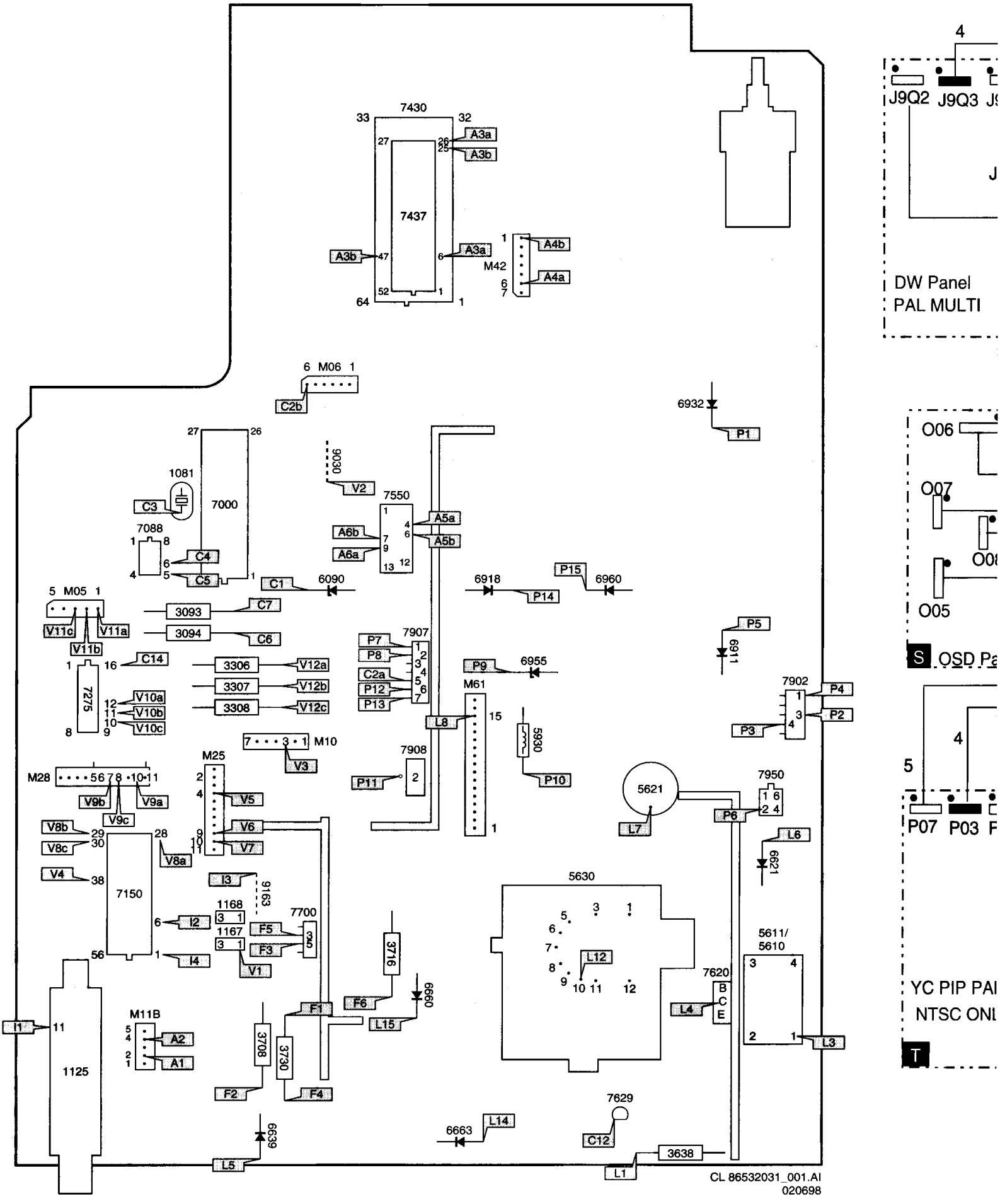
CL 86532031_006.AI
020698



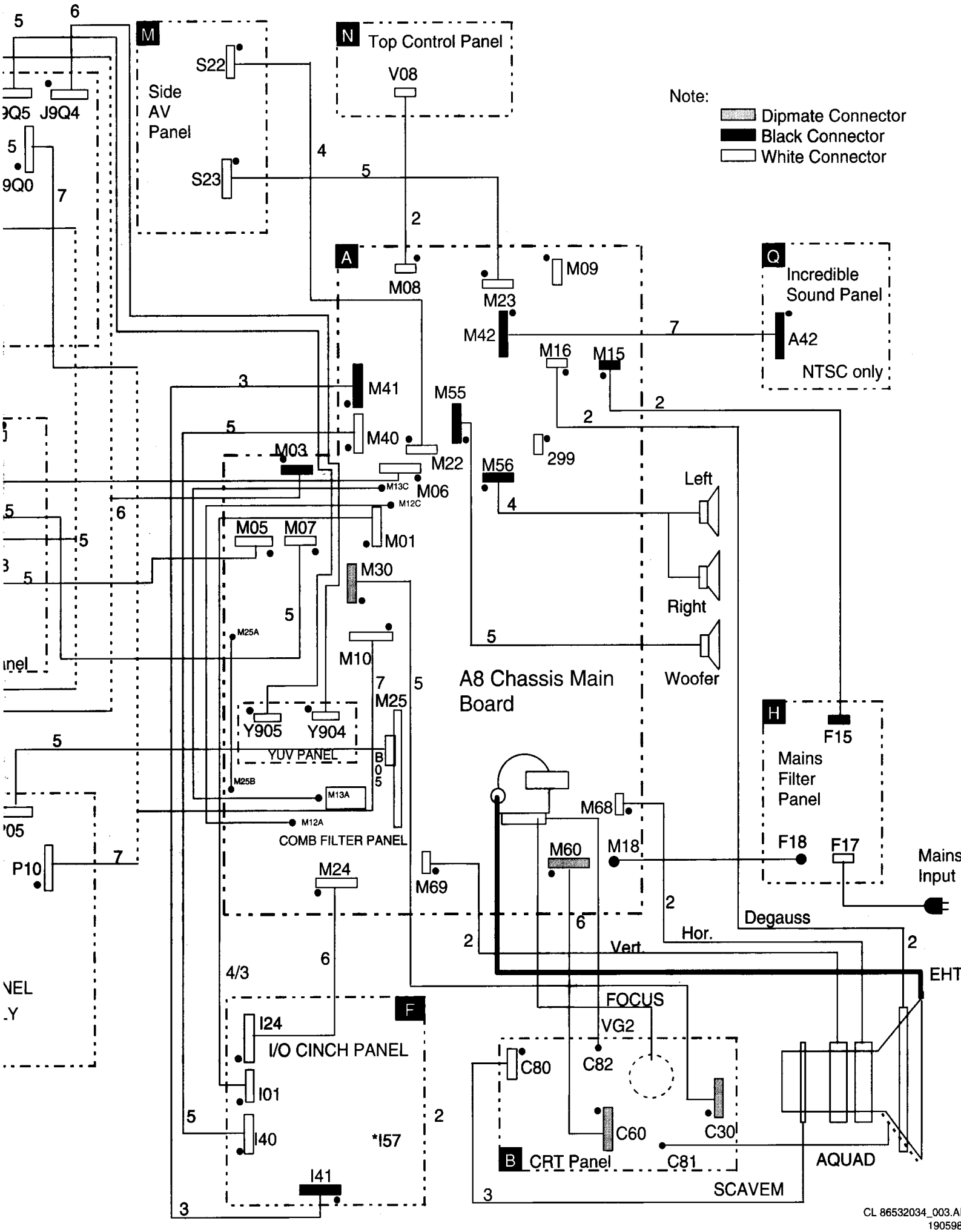
CL 86532031_002.AI
150598



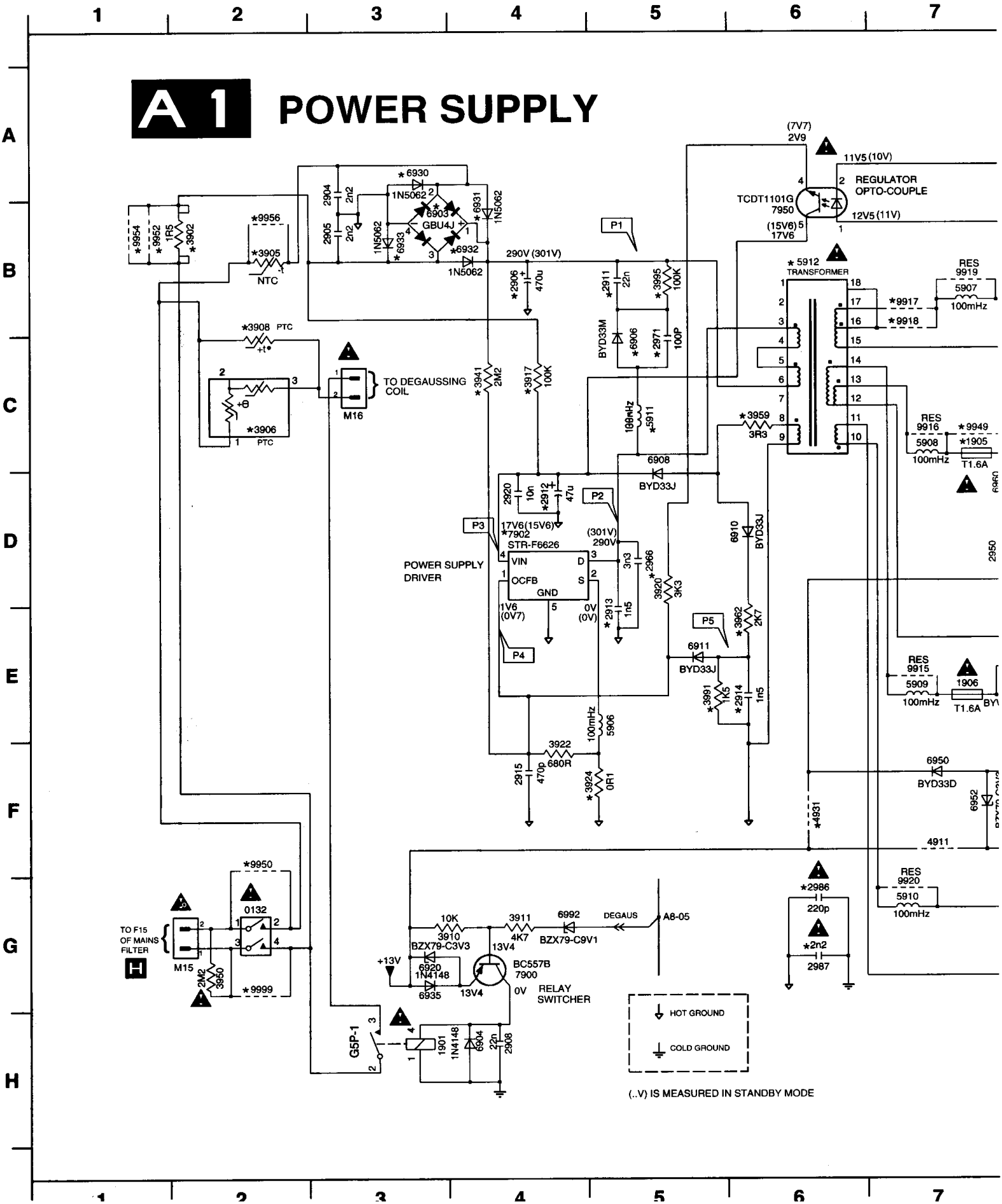
CL 86532031_003.AI
150598

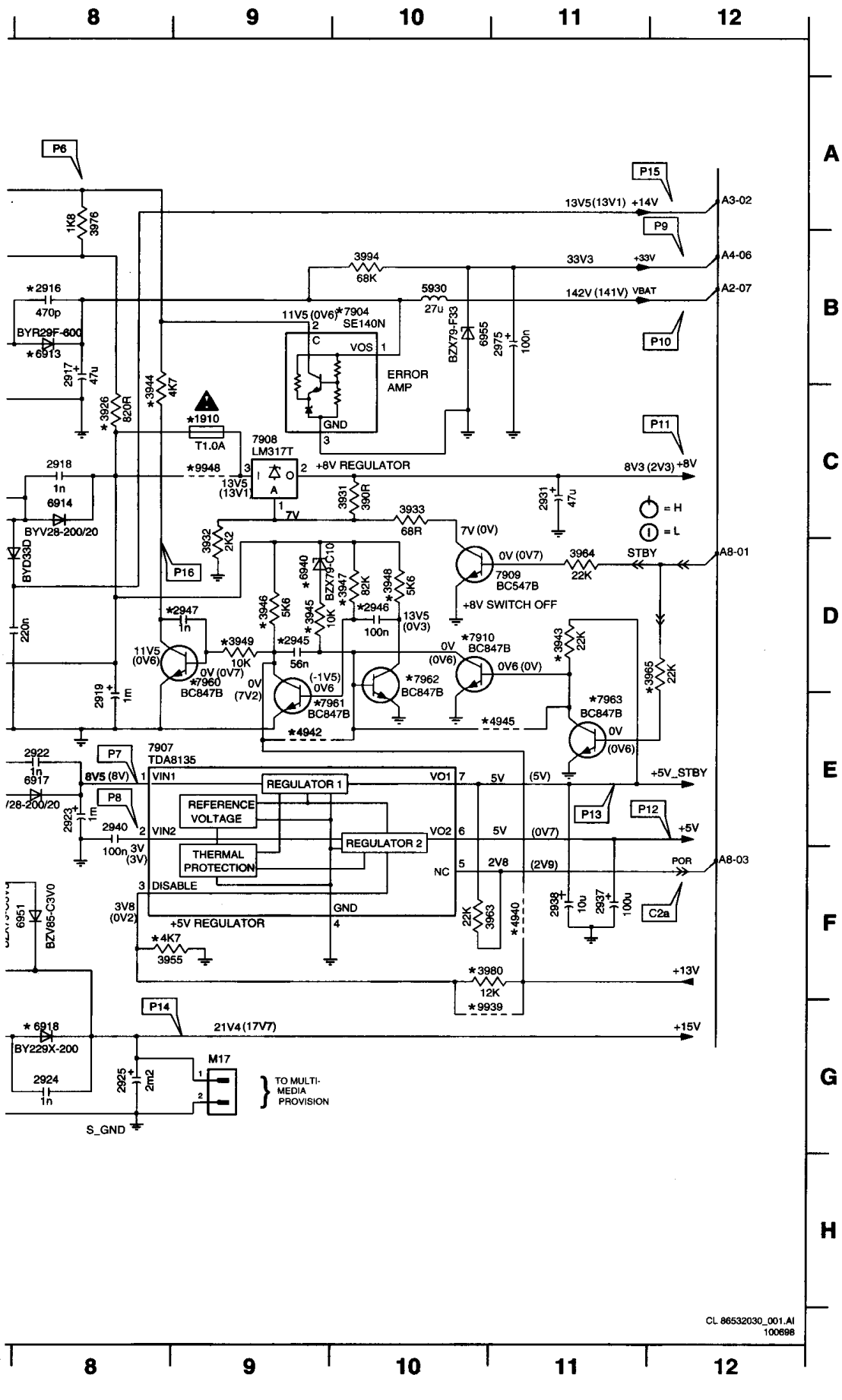

7430
33
32
A3a
A3b
27
26
25
7437
A3b
47
6
A3a
1
A4b
M42
A4a
6
7
52
1
64
1
6 M06 1
C2b
6932
P1
27
26
1081
C3
7000
9030
V2
7550
A5a
A6b
A5b
A6a
7088
C4
C5
C1
6090
6918
P14
P15
6960
5 M05 1
V11c
V11a
V11b
3093
C7
3094
C6
7907
P7
P8
C2a
P12
P13
P9
6955
M61
L8
15
1
5930
P10
7908
P11
2
P5
6911
7902
P4
P2
P3
C14
7275
V10a
V10b
V10c
3306
V12a
3307
V12b
3308
V12c
7 M10 1
V3
M25
M28
V9b
V9a
V9c
V5
V8b
V8c
V6
V7
V8a
V4
7150
I3
9163
1168
I2
1167
I4
F5
F3
7700
V1
5621
L7
7950
P6
L6
6621
5630
L12
7620
B
C
E
L4
5611/
5610
L3
3716
F6
6660
L15
F1
M11B
A2
A1
3708
3730
F2
F4
I1
11
1125
6639
L5
6663
L14
7629
C12
3638
L1
CL 86532031_001.AI
020698
4
J9Q2
J9Q3
DW Panel
PAL MULTI
O06
O07
O05
S OSD Pa
4
5
P07
P03
YC PIP PAI
NTSC ONL
T

A8 AP WIRE TREE DIAGRAM



CL 86532034_003.AI
190598


A 1 POWER SUPPLY
(7V7)
2V9
11V5(10V)
REGULATOR
OPTO-COUPLE
TCDT1101G
7950
12V5(11V)
(15V6)
17V6
*5912
TRANSFORMER
RES
9919
5907
100mHz
*9917
*9918
RES
9916
5908
100mHz
*9949
*1905
T1.6A
RES
9915
5909
100mHz
1906
T1.6A
RES
9920
5910
100mHz
*6930
1N5062
GBU4J
6903
6931
6933
6932
290V (301V)
*2906
470u
*9956
*3905
NTC
*3908 PTC
*3906 PTC
TO DEGAUSSING
COIL
M16
*3941
2M2
*3917
100K
P1
*2911
22n
*3995
100K
BYD33M
*6906
*2971
100P
100mHz
*5911
*3959
3R3
6908
BYD33J
P2
2920
10n
*2912
47u
P3
17V6(15V6)
*7902
STR-F6626
VIN
OCFB
GND
D
S
POWER SUPPLY
DRIVER
(301V)
290V
3n3
*2966
3920
3K3
*2913
1n5
1V6
(0V7)
0V
(0V)
P4
P5
6910
BYD33J
*3962
2K7
6911
BYD33J
*3991
1K5
*2914
1n5
100mHz
5906
3922
680R
2915
470p
*3924
0R1
6950
BYD33D
6952
*4931
4911
*2986
220p
*2n2
2987
*9950
0132
TO F15
OF MAINS
FILTER
H
M15
2M2
3950
*9999
10K
3910
BZX79-C3V3
3911
4K7
6992
BZX79-C9V1
DEGAUS
A8-05
+13V
6920
1N4148
6935
13V4
BC557B
7900
0V
RELAY
SWITCHER
G5P-1
1901
1N4148
6904
22n
2908
HOT GROUND
COLD GROUND
(..V) IS MEASURED IN STANDBY MODE



M15 G2	6935 G3
M16 C3	6940 D9
M17 G9	6950 F7
0132 G2	6951 F8
1901 H3	6952 F7
1905 C7	6955 B10
1906 E7	6960 D7
1910 C9	6992 G4
2904 A3	7900 G4
2905 B3	7902 D4
2906 B4	7904 B10
2908 H4	7907 E8
2911 B5	7908 C9
2912 D4	7909 D11
2913 E5	7910 D11
2914 E6	7950 B6
2915 F4	7960 D9
2916 B8	7961 E10
2917 B8	7962 D10
2918 C8	7963 E11
2919 E8	9915 E7
2920 D4	9916 C7
2922 E8	9917 B7
2923 E8	9918 B7
2924 G8	9919 B7
2925 G8	9920 G7
2931 C11	9939 G11
2937 F11	9948 C9
2938 F11	9949 C7
2940 E8	9950 F2
2945 D9	9952 B1
2946 D10	9954 B1
2947 D9	9956 B2
2950 D7	9999 G2
2966 D5	
2971 C5	
2975 B11	
2986 G6	
2987 G6	
3902 B2	
3905 B2	
3906 C2	
3908 B2	
3910 G3	
3911 G4	
3917 C4	
3920 D5	
3922 F4	
3924 F5	
3926 C8	
3931 C10	
3932 D9	
3933 C10	
3941 C4	
3943 D11	
3944 C8	
3945 D9	
3946 D9	
3947 D10	
3948 D10	
3949 D9	
3950 G2	
3955 F8	
3959 C6	
3962 E6	
3963 F10	
3964 D11	
3965 D12	
3976 A8	
3980 F11	
3991 E5	
3994 B10	
3995 B5	
4911 F7	
4931 F6	
4940 F11	
4942 E9	
4945 E11	
5906 E5	
5907 B7	
5908 C7	
5909 E7	
5910 G7	
5911 C5	
5912 B6	
5930 B10	
6903 B3	
6904 H4	
6906 C5	
6908 C5	
6910 D6	
6911 E5	
6913 B8	
6914 C8	
6917 E8	
6918 G8	
6920 G3	
6930 A3	
6931 B4	
6932 B4	
6933 B3	

C2a ⏻ 2.9V DC

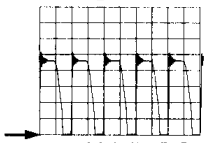
C2a ⓘ 2.9V DC

P1 ⏻ 290V DC

P1 ⓘ 290V DC

P2 ⏻ burstmode

P2 ⓘ



100V / div DC
5µs / div

P3 ⏻ 13.7V DC

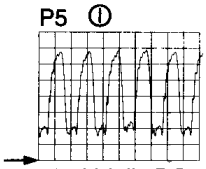
P3 ⓘ 17.6V DC

P4 ⏻ 0.9V DC

P4 ⓘ 1.6V DC

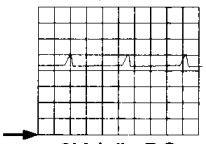
P5 ⏻ burstmode

P5 ⓘ



0.5V / div DC
5µs / div

P6 ⏻



2V / div DC
1ms / div

P6 ⓘ 11.2V DC

P7 ⏻ 7.2V DC

P7 ⓘ 8.4V DC

P8 ⏻ 3.1V DC

P8 ⓘ 3.1V DC

P9 33V DC

P10 ⏻ 142V DC

P10 ⓘ 142V DC

P11 ⏻ 1.5V DC

P11 ⓘ 8.4V DC

P12 5V DC

P13 ⏻ 5V DC

P13 ⓘ 5V DC

P14 ⏻ 16V DC

P14 ⓘ 17.8V DC

P15 ⏻ 12.5V DC

P15 ⓘ 13.5V DC

OSC_A1.ai

FIG. 1

ITEM NO.	EURO 25, 28, 29, 28WS	USA	A/P S.R.	BR 29SF	EURO 21, 24WS	BR 32V	USA 27V, 32V AMV	BR 27V	A
1905	-----	T1.6A	-----	T1.6A	-----	T1.6A	T1.6A	T1.6A	T1
1906	T1.6A	T1.6A	T1.6A	T2.5A	T1.6A	T2.5A	T1.6A	T2.5A	T2
1910	-----	-----	-----	T1.0A	-----	T1.0A	T1.OA	T1.0A	T1
2906	220U/400V	470U/250V	220U/400V	470U/400V	220U/400V	680U/400V	470U/400V	470U/400V	47
2911	-----	-----	-----	-----	-----		22N/400V		22
2912	33U/25V	47U/25V	33U/25V	47U/25V	33U/25V	47U/25V	47U/25V	47U/25V	47
2913	1N5/2KV		1N5/2KV	IN5/2KV	1N5/2KV	1N5/2KV	1N5/2KV	1N5/2KV	1N
2914	1N5/50V	1N/50V	1N5/50V	1N/50V	1N5/50V	1N/50V	1N/50V	1N/50V	1N
2916	470P/2KV	470P/2KV	470P/2KV	1N/2KV	470P/2KV	1N/2KV	470P/2KV	1N/2KV	47
2937	10U/50V	10U/50V	100U/10V	100U/10V	10U/50V	100U/10V	100U/10V	100U/10V	10
2945 (SMD)	56N/50V	-----	-----	-----	56N/50V	-----	-----	-----	---
2946 (SMD)	100N/16V	-----	-----	-----	100N/16V	-----	-----	-----	---
2947 (SMD)	2N2/50V	-----	-----	-----	2N2/50V	-----	-----	-----	---
2966	-----	3N3/2KV	-----	-----	2N2/50V	-----	-----	-----	---
2971	-----	-----	-----	-----	2N2/50V	-----	100P/1KV	-----	10
2986	-----	-----	220P/250V	220P/250V	-----	220P/250V	-----	220P/250V	22
2987	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N5/250V	1N
3902	1R5/7W	-----	IR5/7W	-----	IR5/7W	-----	-----	-----	---
3905	-----	-----	-----	2R5/NTC	-----	2R5/NTC	-----	2R5/NTC	2R
3906	9R/220V	-----	9R/220V	9R/220V	9R/220V	9R/220V	9R/220V	9R/220V	9R
	PTC MONO	-----	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PTC MONO	PT
3908	-----	10R/120V	-----	-----	-----	-----	-----	-----	---
	-----	PTC	-----	-----	-----	-----	-----	-----	---
3917	150K/3W	100K/3W	150K/3W	100K/3W	150K/3W	100K/3W	100K/3W	100K/3W	10
3924	0.15R/3W	0.1R/3W	0.15R/3W	0.1R/3W	0.15R/3W	0.1R/3W	0.1R/3W	0.1R/3W	0.
3926 (SMD)	820R	1K	1K	1K	820R	1K	1K	1K	1K
3941	-----	-----	-----	3M3/VR25	-----	3M3/VR25	3M3/VR25	3M3/VR25	3M
3943 (SMD)	22K	22K	-----	-----	22K	-----	-----	-----	---
3944 (SMD)	4K7	-----	-----	-----	4K7	-----	-----	-----	---
3945 (SMD)	10K	-----	-----	-----	10K	-----	-----	-----	---
3946	5K6	-----	-----	-----	5K6	-----	-----	-----	---
3947	82K	-----	-----	-----	8K2	-----	-----	-----	---
3948	5K6	-----	-----	-----	5K6	-----	-----	-----	---
3949	10K	-----	-----	-----	10K	-----	-----	-----	---
3955	4K7	-----	4K7	4K7	4K7	4K7	4K7	4K7	4K
3959	3R3	33R	3R3	3R3	3R3	3R3	3R3	3R3	3R
3962	2K7	1K8	2K7	1K8	2K7	1K8	1K8	1K8	1K
3965 (SMD)	22K	22K	-----	-----	22K	-----	-----	-----	---
3980	12K	-----	12K	12K	12K	20K	20K	20K	12
3991	-----	-----	-----	1K5	-----	1K5	1K5	1K5	1K
3995	-----	-----	-----	-----	-----	-----	100K/3W	-----	10
4931 (SMD)	-----	JUMPER	-----	-----	JUMPER	JUMPER	JUMPER	-----	---
4940 (SMD)	-----	JUMPER	-----	-----	-----	-----	-----	-----	---
4942 (SMD)	-----	JUMPER	-----	-----	-----	-----	-----	-----	---
4945 (SMD)	-----	JUMPER	-----	-----	-----	-----	-----	-----	---
5911	-----	JUMPER	-----	-----	-----	-----	BEAD/100MHZ	-----	BE
5912	DT441	DT496	DT441	DT464	DT441	DT464	DT464	DT464	DT
6903	-----	GBU4J	-----	GBU4J	-----	GBU4J	GBU4J	GBU4J	GB
6906	-----	-----	-----	-----	-----	-----	BYD33M	-----	BY
6913	BYV29F-500	BYV29F-400	BYV29F-600	BYV29F-500	BYV29F-600	BYV29F-500	BYV29F-600	BYV29F-500	BY
6918	BYW29F-100	BY229X-200	BYW29F-100	BYW29F-100	BYW29F-100	BYW29F-100	BY229X-200	BYW29F-100	BY
6930	1N5062	-----	1N5062	-----	1N5062	-----	-----	-----	---
6931	1N5062	-----	1N5062	-----	1N5062	-----	-----	-----	---
6932	1N5062	-----	1N5062	-----	1N5062	-----	-----	-----	---
6933	1N5062	-----	1N5062	-----	1N5062	-----	-----	-----	---
6940	BZX79-C10	-----	-----	-----	BZX79-C10	-----	-----	-----	---
7902	STR-F6654	STR-F6626	STR-F6654	STR-F6656	STR-F6654	STR-F6656	STR-F6656	STR-F6656	ST
7904	SE-140N	SE-130N	SE-140N	SE-140N	SE-140N	SE-130N	SE-130N	SE-130N	SE
7910	BC847B	-----	-----	-----	BC847B	-----	-----	-----	---
7960	BC847B	-----	-----	-----	BC847B	-----	-----	-----	---
7961	BC847B	-----	-----	-----	BC847B	-----	-----	-----	---
7962	BC847B	-----	-----	-----	BC847B	-----	-----	-----	---
7963	BC847B	BC847B	-----	-----	BC847B	-----	-----	-----	---

TO BE CONTINUED ON FIG. 2

FIG. 2

ITEM NO.	EURO 25, 28, 29, 28WS	USA	A/P S.R.	BR 29SF	EURO 21, 24WS	BR 32V	USA 27V, 32V AMV	BR 27V	A/
9917	JUMPER	-----	JUMPER	JUMPER	JUMPER	-----	-----	-----	JU
9918	-----	JUMPER	-----	-----	-----	JUMPER	JUMPER	-----	JU
9939	-----	JUMPER	-----	-----	-----	-----	-----	-----	---
9948	JUMPER	JUMPER	JUMPER	-----	JUMPER	-----	-----	-----	---
9949	JUMPER	-----	-----	-----	JUMPER	-----	-----	-----	---
9950	-----	JUMPER	-----	-----	-----	-----	JUMPER	-----	---
9952	-----	JUMPER	-----	-----	JUMPER	JUMPER	JUMPER	JUMPER	JU
9954	-----	JUMPER	-----	-----	JUMPER	JUMPER	JUMPER	JUMPER	JU
9956	JUMPER	JUMPER	JUMPER	JUMPER	-----	-----	JUMPER	-----	---
9999	-----	JUMPER	-----	-----	-----	-----	JUMPER	-----	---

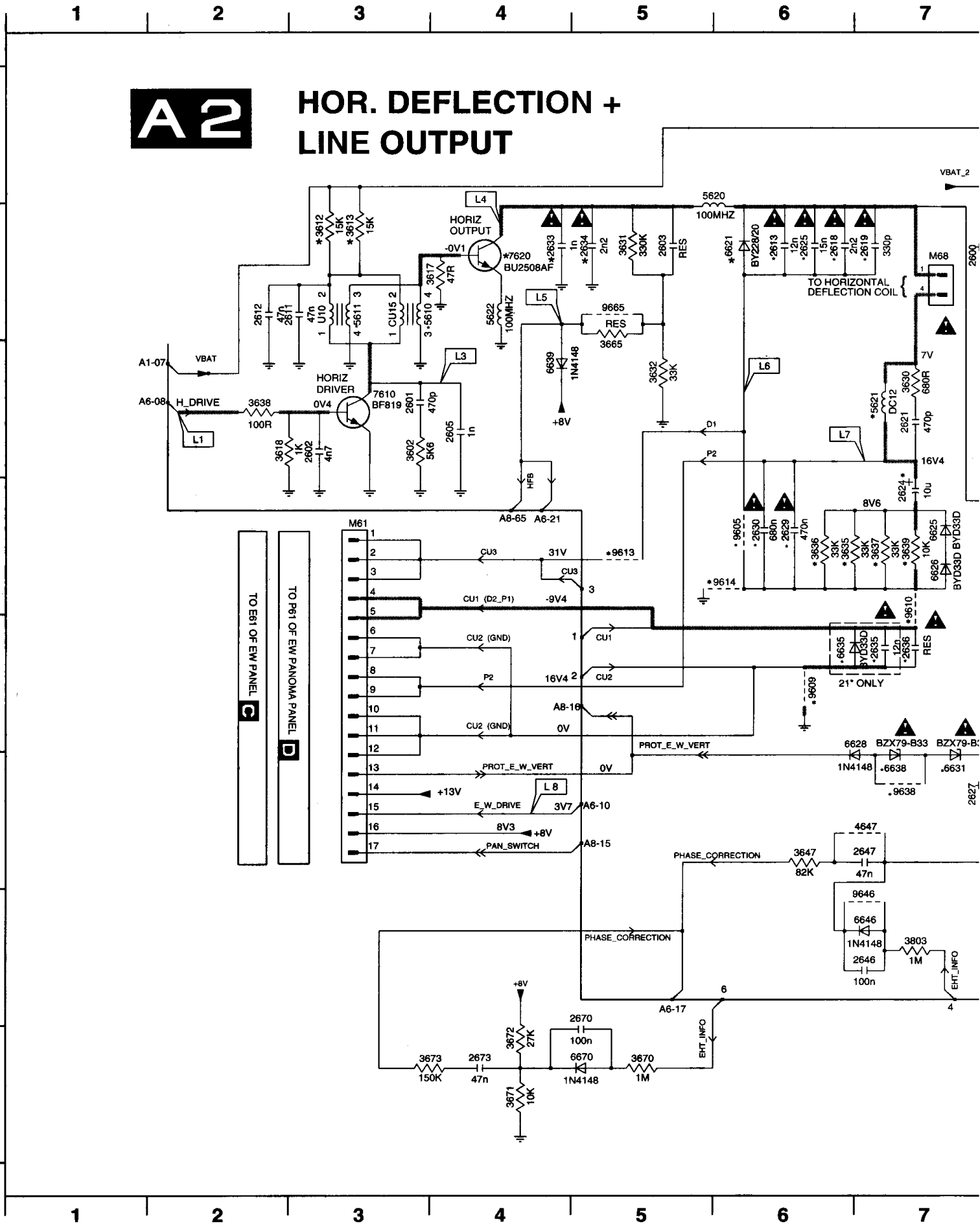
Diversity table for schematic A2

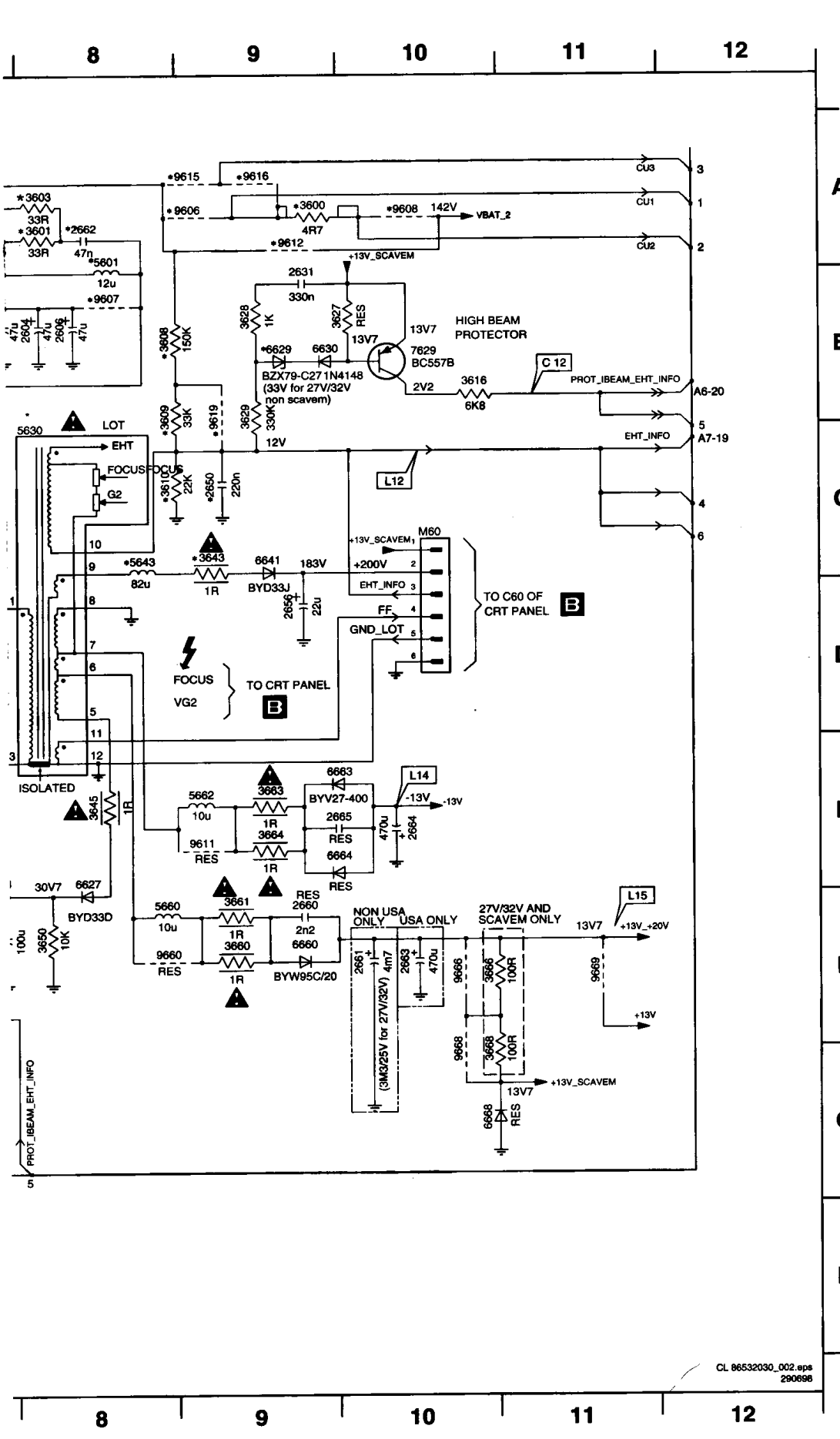
ITEM NO.	29"SF	27V	25"/28" BLD	32V	35V	24"/28" WIDE	21" EUR	25" BLS
2618/19	2N2	-----	1N8	560P	2N2	2N2	-----	470P
2624	2U2	1U	4U7	1U	1U	2U2	-----	4U7
2625/13	12N	10N	10N	11N	12N	12N	7N5	10N
2629/30	680N	360N	680N	470N	560N	560N	470N	680N
2633/34	1N	390P	390P	820P	1N2	1N5	820P	390P
2635/36	-----	-----	-----	-----	-----	-----	11N	-----
2650	150N	220N	100N	220N	220N	100N	33N	150N
2662	27N	15N	10N	15N	12N	10N	10N	10N
3600	-----	4R7	-----	-----	-----	-----	-----	-----
3601/03	33R	15R	33R	15R	33R	33R	33R	33R
3608	39K	39K	100K	39K	39K	82K	150K	56K
3609/9619	39K	39K	33K	39K	39K	68K	J9619	39K
3610	22K	22K	33K	22K	22K	33K	39K	27K
3612	12K	12K	12K	6K8	12K	10K	18K	12K
3613	15K	15K	10K	6K8	10K	10K	15K	15K
3635/36/37	-----	33K/--/--	-----	33K/--/--	39K/47K/47K	-----	-----	-----
3639	10K	-----	10K	-----	-----	10K	----	10K
5601	33U	22U	33U	22U	33U	33U	33U	33U
5610/11	..33811	..33811	..30882	..33341	..33341	..33811	..33341	..30882
5621	..53111	..51703	..53111	..53181	..53201	..53221	..51643	..53191
5630	..02282	..20591 ..20621(USA)	..02282	..20591 ..20621(USA)	..02279 ..02297(USA)	..02285	..02285	..02285
5643	100U	27U	100U	27U	82U	100U	100U	100U
6621	BY228	BY228	BY228	BY328	BY328	BY228	BY228	BY228
6629	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27	BZX79-C27
6631	BZX79-B15	BZX79-B18	BZX79-B16	BZX79-B18	BZX79-B18	-----	-----	BZX79-B18
6635	-----	-----	-----	-----	-----	-----	BY328	-----
6638	BZX79-B20	BZX79-B10	BZX79-B18	BZX79-B12	BZX79-B18	J9638	J9638	BZX79-B20
7620	BU2508AF	BU2508AF	BU2508AF	BU2520AF	BU2520DF	BU2508AF	BU2508AF	BU2508AF
9605	OUT	IN	OUT	OUT	OUT	OUT	IN	OUT
9606	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9608	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9609	IN	OUT	IN	IN	IN	IN	IN	IN
9610	IN	OUT	IN	IN	IN	IN	IN	IN
9612	IN	OUT	IN	IN	IN	IN	IN	IN
9613	IN	OUT	IN	IN	IN	IN	OUT	IN
9614	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9615	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT
9616	OUT	IN	OUT	OUT	OUT	OUT	OUT	OUT

FIG. 3

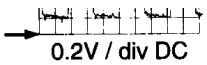
/P F.R.	BR 36V	USA 36V AMV
.6A	T1.6A	T1.6A
!.5A	T2.5A	T1.6A
.OA	T1.0A	T1.0A
'0U/400V	680U/400V	470U/400V
'N/400V		22N/400V
'U/25V	47U/25V	47U/25V
15/2KV	1N5/2KV	1N5/2KV
1/50V	1N/50V	1N/50V
'0P/2KV	1N/2KV	470P/2KV
)0U/10V	100U/10V	100U/10V
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
)0P/1KV	-----	100P/1KV
)0P/250V	220P/250V	-----
15/250V	1N5/250V	1N5/250V
--	-----	1N5/250V
15/NTC	2R5/NTC	-----
1/220V	9R/220V	9R/220V
TC MONO	PTC MONO	PTC MONO
--	-----	-----
--	-----	-----
)0K/3W	100K/3W	100K/3W
1R/3W	0.1R/3W	0.1R/3W
[	1K	1K
13/VR25	3M3/VR25	3M3/VR25
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
K7	4K7	4K7
R3	3R3	3R3
8	1K8	1K8
--	-----	-----
K	12K	12K
5	1K5	1K5
)0K/3W	-----	100K/3W
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
EAD/100MHZ	-----	BEAD/100MHZ
T464	DT464	DT464
BU4J	GBU4J	GBU4J
/D33M	-----	BYD33M
/V29F-600	BYV29F-500	BYV29F-600
/W29F-100	BYW29F-100	BY229X-200
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
TR-F6656	STR-F6656	STR-F6656
E-140N	SE-130N	SE-130N
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----

P F.R.	BR 36V	USA 36V AMV
MPER	-----	-----
MPER	-----	-----
--	-----	-----
--	-----	-----
--	-----	-----
--	-----	JUMPER
MPER	JUMPER	JUMPER
MPER	JUMPER	JUMPER
--	-----	JUMPER
--	-----	JUMPER

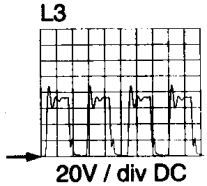

A2
HOR. DEFLECTION +
LINE OUTPUT
HORIZ OUTPUT
-0V1
*7620 BU2508AF
HORIZ DRIVER
7610 BF819
0V4
H_DRIVE
VBAT
A1-07
A6-08
A8-65
A6-21
HFB
100MHZ
5620
TO HORIZONTAL DEFLECTION COIL
M68
M61
TO P61 OF EW PANOMA PANEL D
TO 91 OF EW PANEL C
CU3
31V
CU1 (D2_P1)
-9V4
CU2 (GND)
P2
16V4
PROT_E_W_VERT
+13V
E_W_DRIVE
3V7
8V3
+8V
PAN_SWITCH
A8-16
A8-15
A6-10
21" ONLY
PHASE_CORRECTION
EHT_INFO
A6-17
BZX79-B33
1N4148
BYD33D
8V6
7V
16V4



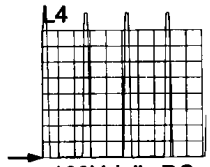
M60 C10	6660 F9
M61 D3	6663 E10
M68 B7	6664 E10
2600 B7	6668 G10
2601 C3	6670 H5
2602 C3	7610 C3
2603 B5	7620 B4
2604 B8	7629 B10
2605 C4	9605 D6
2606 B8	9606 A9
2611 B3	9607 B8
2612 B2	9608 A10
2613 B6	9609 E6
2618 B6	9610 D7
2619 B7	9611 E9
2621 C7	9612 A9
2624 D7	9613 D5
2625 B6	9614 D6
2627 F7	9615 A9
2629 D6	9616 A9
2630 D6	9619 B9
2631 B9	9638 F7
2633 B4	9646 G7
2634 B5	9660 F8
2635 E7	9665 B5
2636 E7	9666 F10
2646 G7	9668 G10
2647 F7	9669 F11
2650 C9	
2656 D9	
2660 F9	
2661 F10	
2662 A8	
2663 F10	
2664 E10	
2665 E9	
2670 G5	
2673 H4	
3600 A9	
3601 A8	
3602 C3	
3603 A8	
3608 B8	
3609 B8	
3610 C8	
3612 B3	
3613 B3	
3616 B10	
3617 B4	
3618 C2	
3627 B10	
3628 B9	
3629 B9	
3630 C7	
3631 B5	
3632 C5	
3635 D6	
3636 D6	
3637 D7	
3638 C2	
3639 D7	
3643 C9	
3645 E8	
3647 F6	
3650 F8	
3660 F9	
3661 F9	
3663 E9	
3664 E9	
3665 C5	
3666 F10	
3668 G10	
3670 H5	
3671 H4	
3672 H4	
3673 H4	
3803 G7	
4647 F7	
5601 A8	
5610 B3	
5611 B3	
5620 A5	
5621 C7	
5622 B4	
5630 C8	
5643 C8	
5660 F8	
5662 E9	
6621 B6	
6625 D7	
6626 D7	
6627 E8	
6628 E7	
6629 B9	
6630 B9	
6631 F7	
6635 E6	
6638 F7	
6639 C4	
6641 C9	
6646 G7	


0.2V / div DC
20µs / div

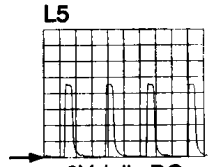
L3


20V / div DC
25µs / div

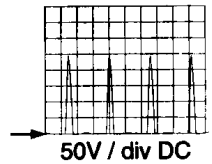
L4


100V / div DC
25µs / div

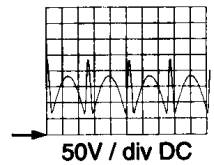
L5


2V / div DC
25µs / div

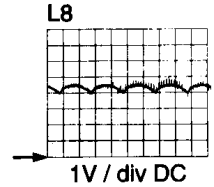
L6


50V / div DC
25µs / div

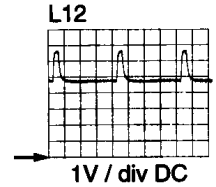
L7


50V / div DC
25µs / div

L8


1V / div DC
10ms / div

L12


1V / div DC
5ms / div

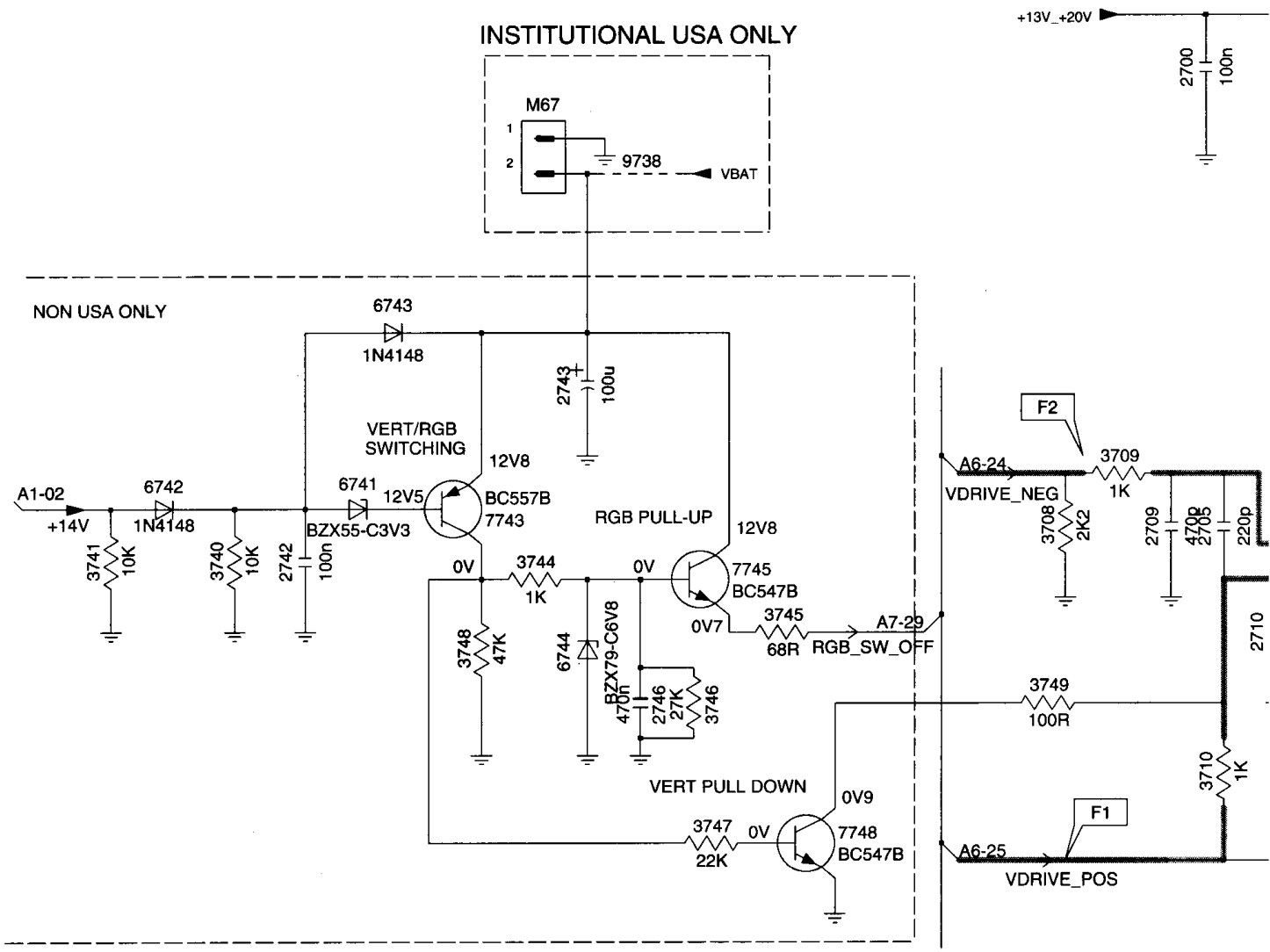
L14 -13V DC

L15 +13.9V DC

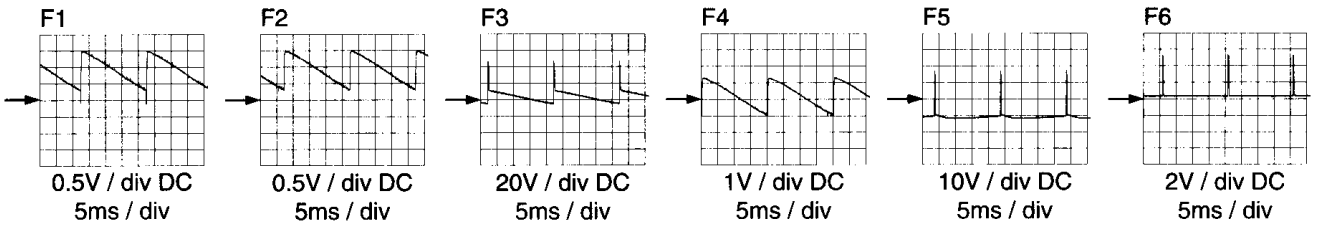
C12 2.2V DC

OSC_A2.ai

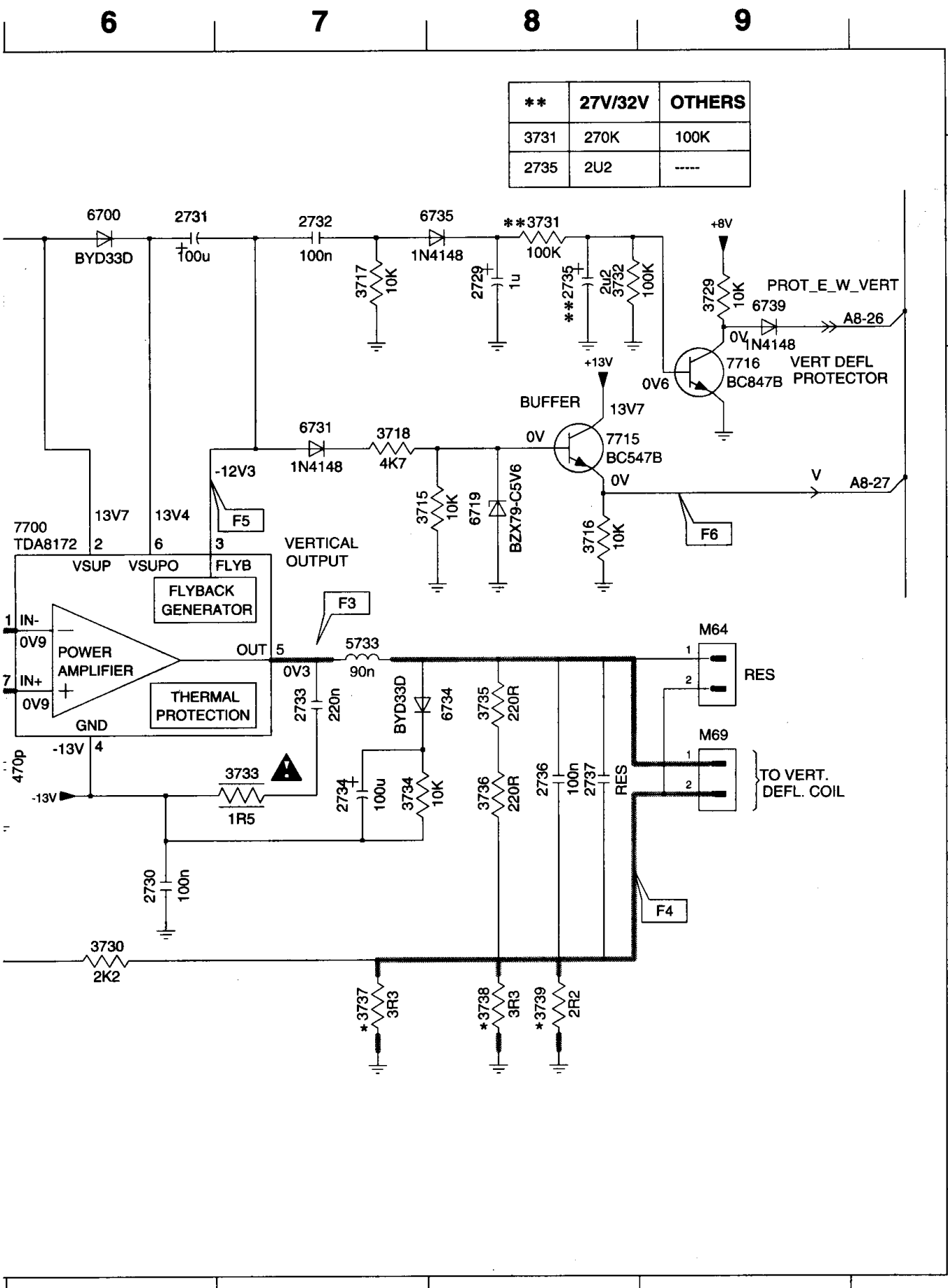
A3 VERTICAL DEFLECTION



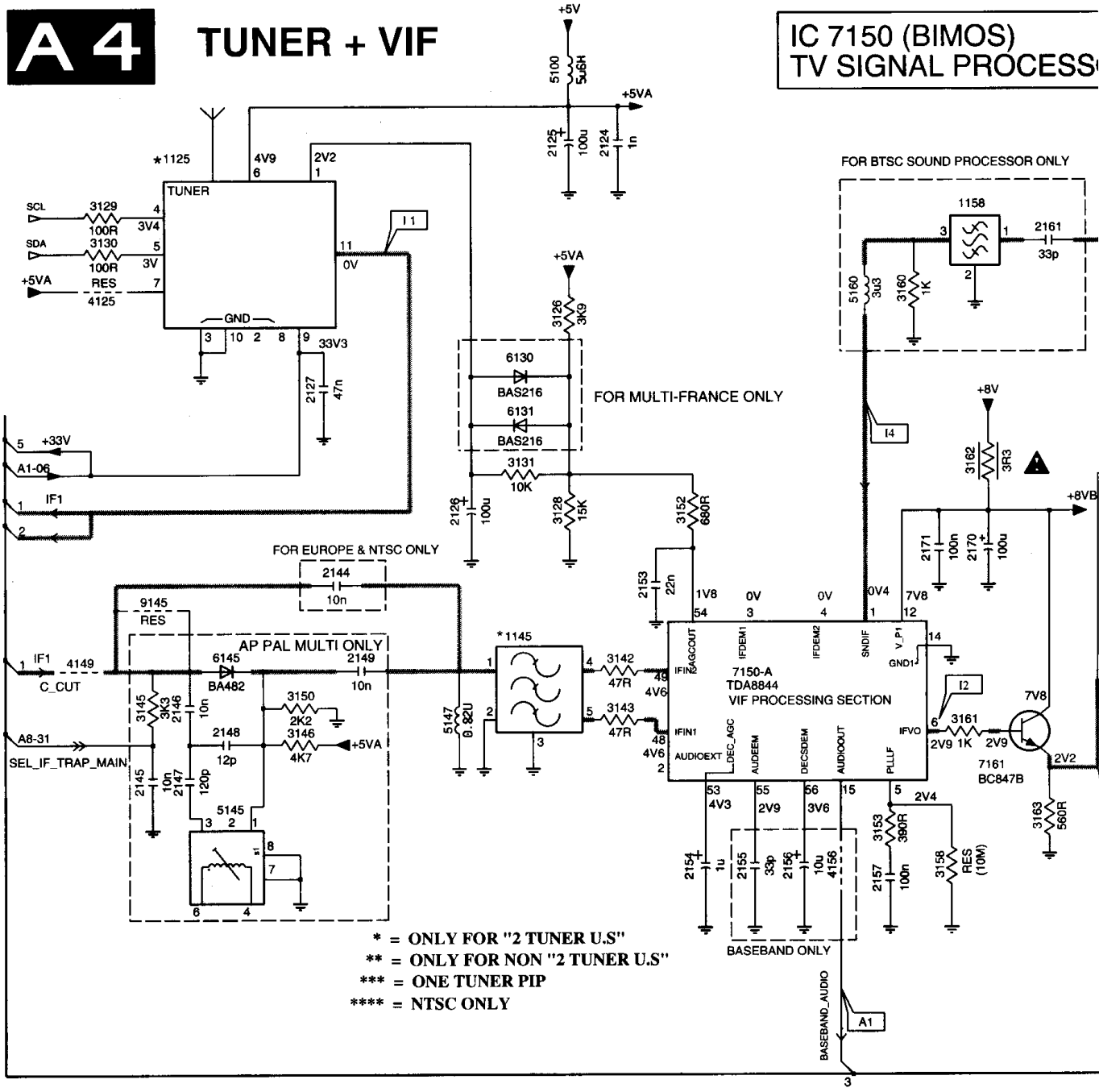
* ITEM NO	29SF	27V	25/28 BLD	32V	35V	24 WIDE	28 WIDE	21
3737	2R7	3R3	3R3	3R3	3R3	4R7	4R7	3R3
3738	2R7	3R3	2R7	4R7	3R3	4R7	4R7	3R3
3739	2R2	3R3	2R7	2R2	2R2	3R3	4R7	---



OSC_A3.ai

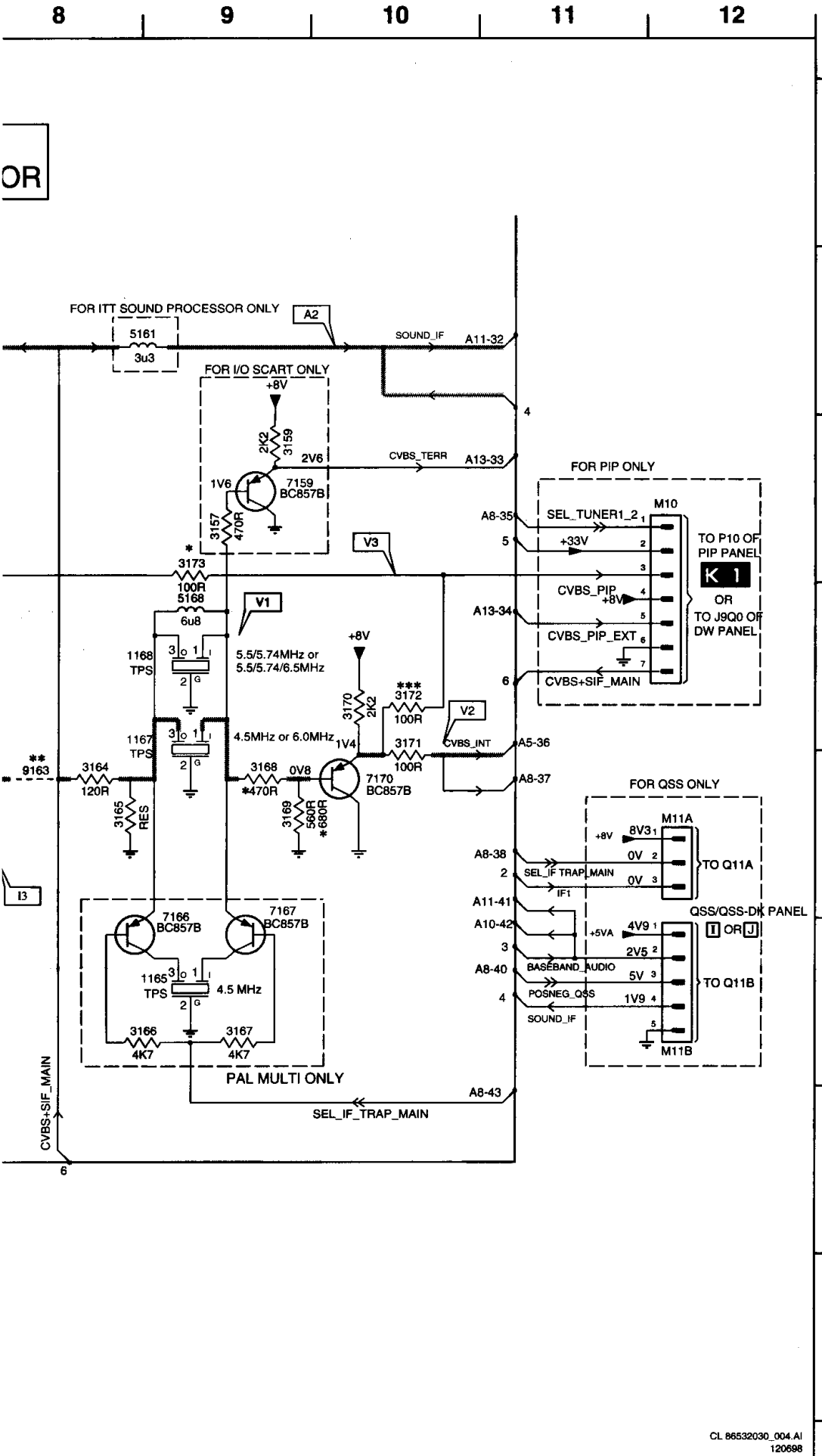


M64 C9
M67 A2
M69 C9
2700 A5
2705 C5
2709 C5
2710 C5
2729 A8
2730 D6
2731 A6
2732 A7
2733 C7
2734 D7
2735 A8
2736 D8
2737 D8
2742 C1
2743 B3
2746 D3
3708 C5
3709 C5
3710 D5
3715 B7
3716 B8
3717 A7
3718 B7
3729 A9
3730 D6
3731 A8
3732 A8
3733 D7
3734 D7
3735 C8
3736 D8
3737 E7
3738 E8
3739 E8
3740 C1
3741 C1
3744 C2
3745 C3
3746 D3
3747 D3
3748 D2
3749 D5
5733 C7
6700 A6
6719 B8
6731 B7
6734 C8
6735 A8
6739 A9
6741 C2
6742 C1
6743 B2
6744 D3
7700 B6
7715 B8
7716 B9
7743 C2
7745 C3
7748 D4
9738 B3



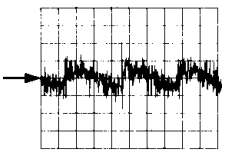
*1125 - TUNER	NON-PIP	PIP
EUROPE	PLL IEC TELE9	----
US	PLL F TELH9	PLL F TELH9
LATAM	----	PLL PHONO TELH9
AP	PLL IEC TELE9	PLL PHONO TELE9
AP - CHINA	PLL IEC 38MHZ	PLL PHONO 38MHZ

* 1145	SYSTEM	REGION
OFWG1984M	NICAM BG	EUROPE/AP
OFWJ1980M	PAL I	EUROPE
OFWK2960M	PAL MULTI/2CS BG	EUROPE/AP
OFWM1967M	NTSC-M	AP/LATAM
OFWM1962M	NTSC-M	NA
OFWK3955M	CHINA-MULTI	AP
OFWK3953M	MULTI-FRANCE	E. EUROPE



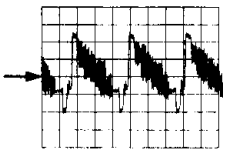
M10 C12
1125 B2
1145 D4
1158 B7
1165 F9
1167 D9
1168 D9
2124 B5
2125 B4
2126 D4
2127 C3
2144 D3
2145 E2
2146 E2
2147 E2
2148 E3
2149 E4
2153 D5
2154 F5
2155 F6
2156 F6
2157 F6
2161 B7
2170 D7
2171 D7
3126 C5
3128 D5
3129 B2
3130 B2
3131 C4
3142 E5
3143 E5
3145 E2
3146 E3
3150 E3
3152 D5
3153 F6
3157 C9
3158 F7
3159 C9
3160 B7
3161 E7
3162 C7
3163 E7
3164 E8
3165 E8
3166 F9
3167 F9
3168 E9
3169 E9
3170 D10
3171 D10
3172 D10
3173 C9
4125 B2
4149 E2
4156 F6
5100 A4
5145 E3
5147 E4
5160 B6
5161 B8
5168 D9
6130 C4
6131 C4
6145 E3
7150-A E6
7159 C9
7161 E7
7166 E9
7167 E9
7170 E10
9145 D2
9163 E8
M11A E12
M11B F12

I1



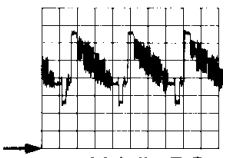
50mV / div AC
20µs / div

I2



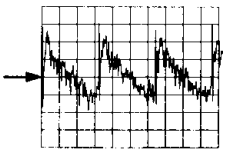
0.5V / div AC
20µs / div

I3



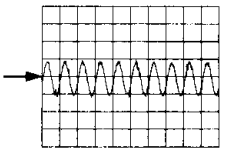
0.5V / div DC
20µs / div

I4



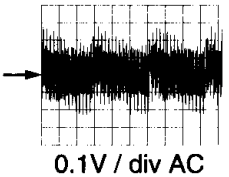
20mV / div DC
20µs / div

A1



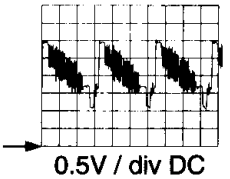
0.5V / div AC
1ms / div

A2



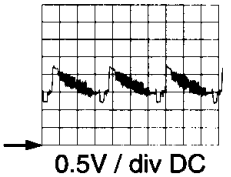
0.1V / div AC
20µs / div

V1



0.5V / div DC
20µs / div

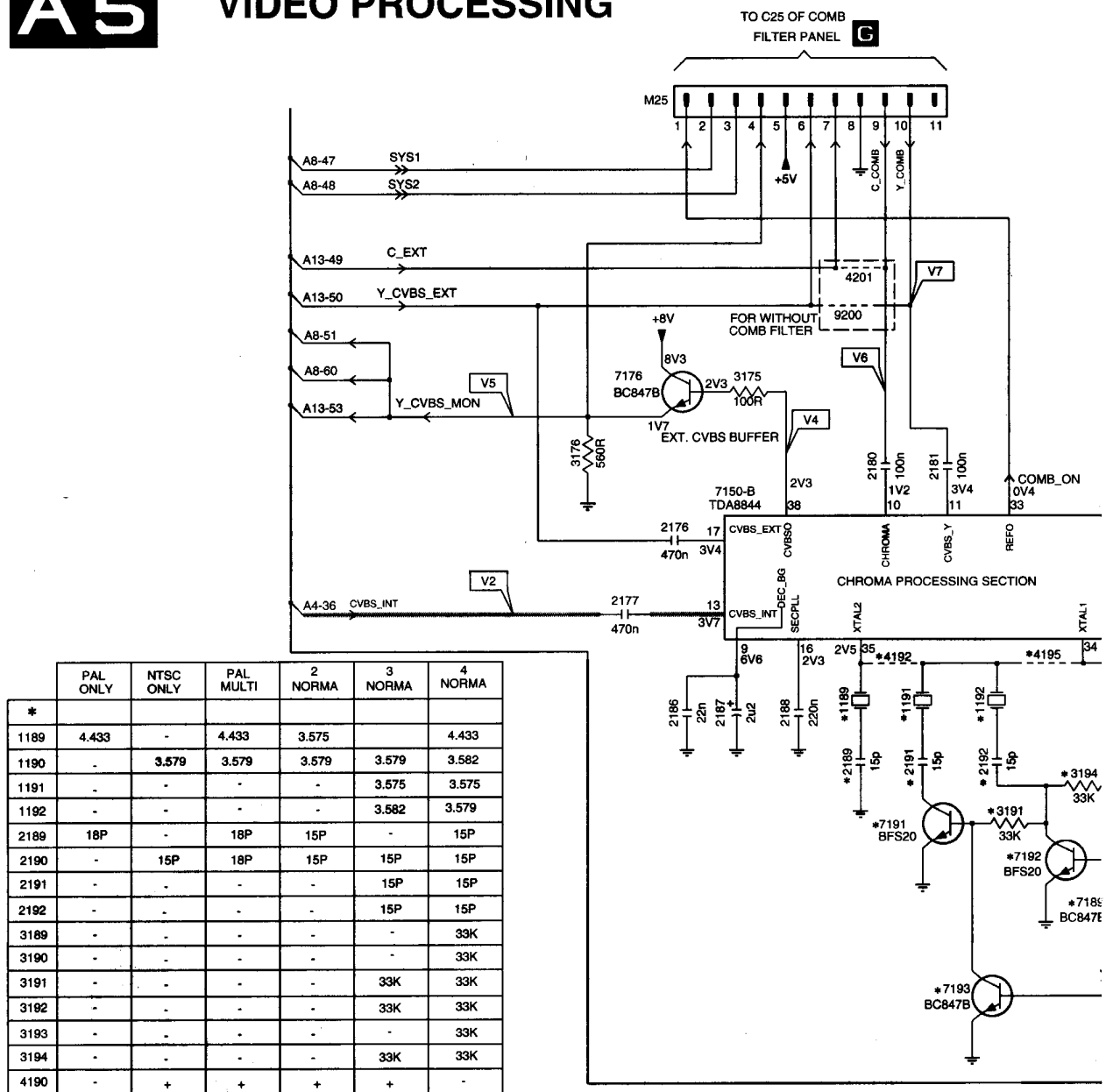
V2



0.5V / div DC
20µs / div

OSC_A4.ai

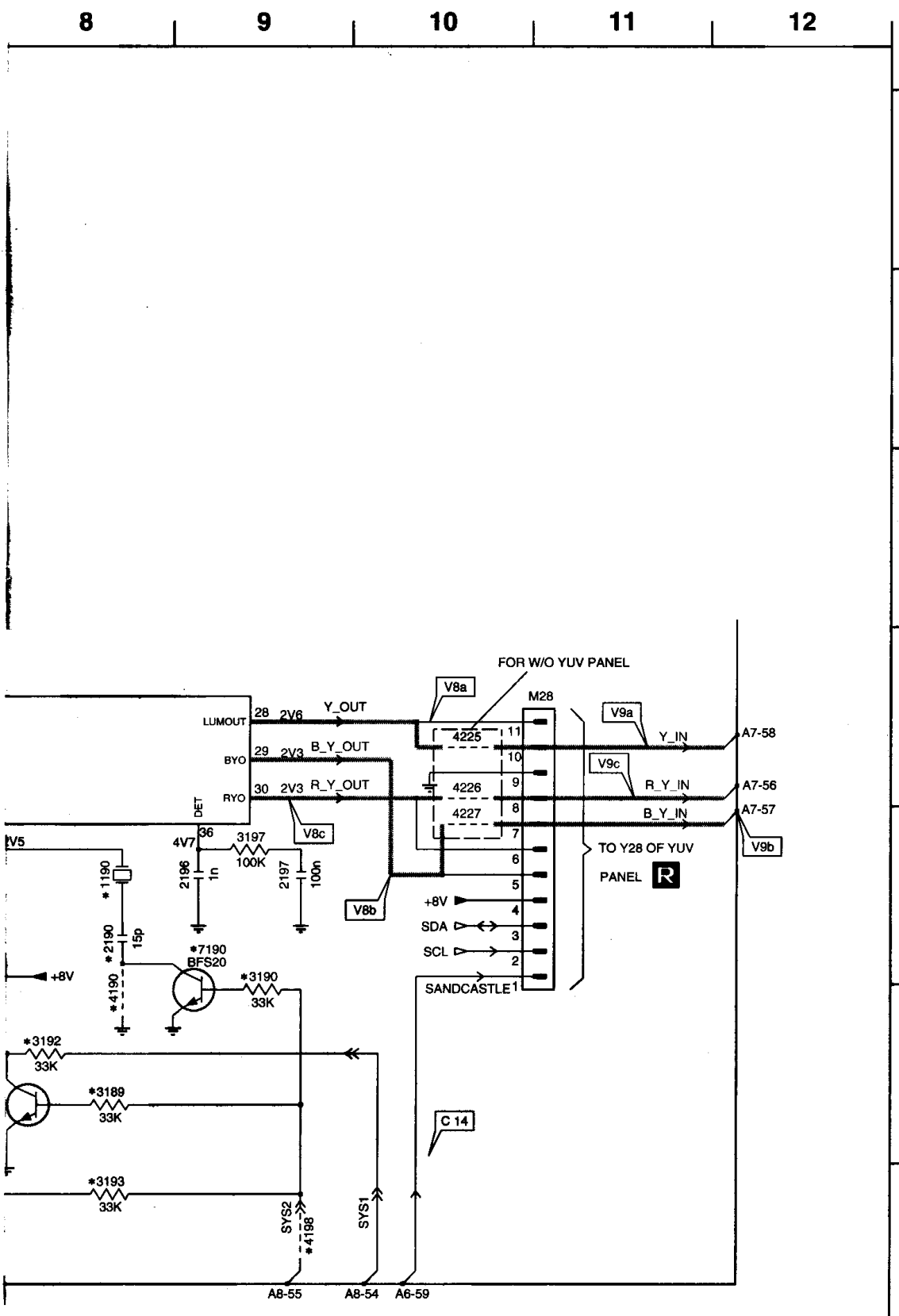
A5 VIDEO PROCESSING



	PAL ONLY	NTSC ONLY	PAL MULTI	2 NORMA	3 NORMA	4 NORMA
*						
1189	4.433	-	4.433	3.575		4.433
1190	-	3.579	3.579	3.579	3.579	3.582
1191	-	-	-	-	3.575	3.575
1192	-	-	-	-	3.582	3.579
2189	18P	-	18P	15P	-	15P
2190	-	15P	18P	15P	15P	15P
2191	-	-	-	-	15P	15P
2192	-	-	-	-	15P	15P
3189	-	-	-	-	-	33K
3190	-	-	-	-	-	33K
3191	-	-	-	-	33K	33K
3192	-	-	-	-	33K	33K
3193	-	-	-	-	-	33K
3194	-	-	-	-	33K	33K
4190	-	+	+	+	+	-
4192	-	-	-	-	+	-
4195	-	-	-	-	-	+
4198	-	-	-	-	+	+
7189	-	-	-	-	-	BC847B
7190	-	-	-	-	-	BFS20
7191	-	-	-	-	BFS20	BFS20
7192	-	-	-	-	BFS20	BFS20
7193	-	-	-	-	-	BC847B

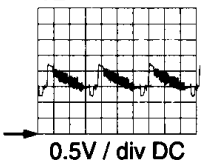
	SYS1	SYS2
PAL M	0	0
PAL BG	0	1
NTSC M	1	0
PAL N	1	1

	FREQUENCY
PAL B/G	4.433619 MHz
PAL M	3.575611 MHz
PAL N	3.582056 MHz
NTSC M	3.579545 MHz



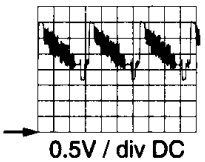
M25 B5
M28 D10
1189 E6
1190 E8
1191 E6
1192 E7
2176 D5
2177 D5
2180 D6
2181 D7
2186 E5
2187 E5
2188 E6
2189 E6
2190 E8
2191 E6
2192 E7
2196 E9
2197 E9
3175 C5
3176 D5
3189 F8
3190 E9
3191 F7
3192 F8
3193 G8
3194 E7
3197 E9
4190 F8
4192 E6
4195 E7
4198 G9
4201 B6
4225 D10
4226 D10
4227 E10
7150-B D5
7176 C5
7189 F8
7190 E9
7191 F6
7192 F7
7193 G7
9200 C6

V2



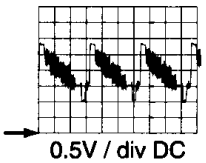
0.5V / div DC
20µs / div

V4



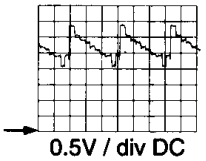
0.5V / div DC
20µs / div

V5



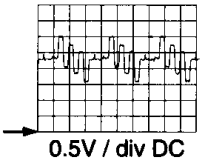
0.5V / div DC
20µs / div

V8a



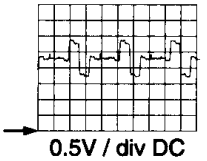
0.5V / div DC
20µs / div

V8b



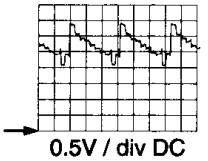
0.5V / div DC
20µs / div

V8c



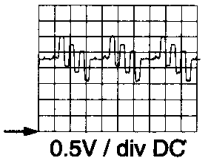
0.5V / div DC
20µs / div

V9a



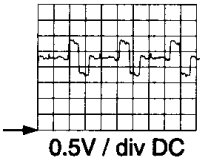
0.5V / div DC
20µs / div

V9b



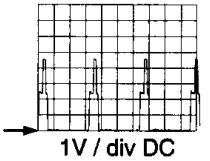
0.5V / div DC
20µs / div

V9c



0.5V / div DC
20µs / div

C14



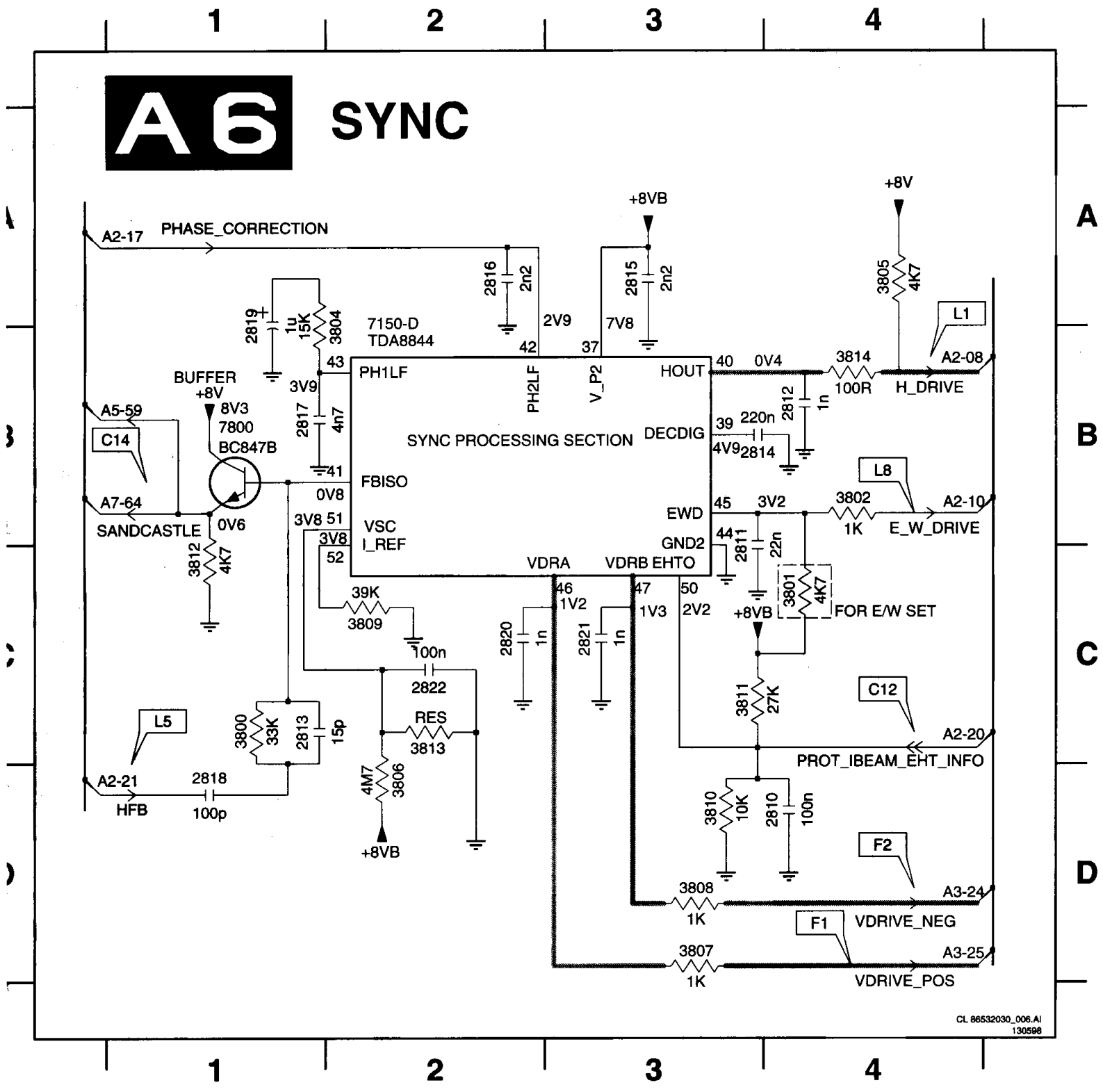
1V / div DC
20µs / div

OSC_A5.ai

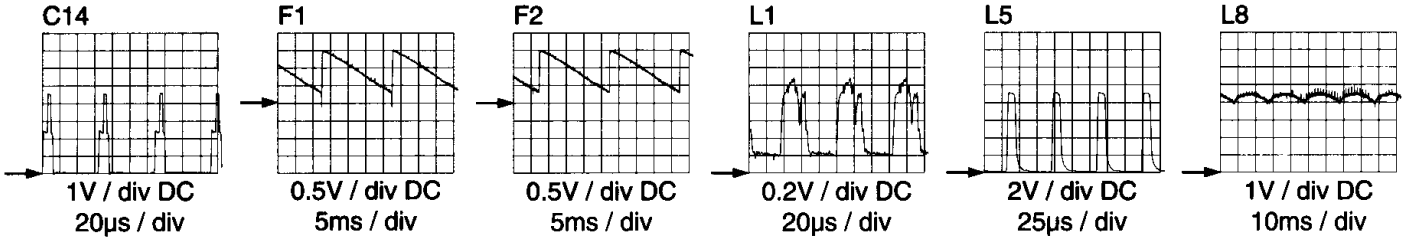
7 Electrical diagrams and print lay-outs

2	A7	2557	C3	3001	D4	3734	C8	6625	B6	7908	C6	9222	D6	9529	D2	9906	C5						
3	C4	2571	C1	3002	D4	3735	C8	6626	B6	7950	A6	9242	D8	9530	D2	9907	C5						
4	D7	2572	B1	3003	D4	3736	C8	6627	C6	9001	C5	9250	D7	9531	D1	9908	C5						
115	B5	2600	B6	3020	D4	3737	C8	6628	C6	9002	B2	9251	D7	9532	D2	9910	C4						
116	C4	2601	A8	3041	D4	3738	C8	6629	A8	9003	B1	9252	D7	9533	D2	9911	B4						
132	A2	2603	A7	3042	D4	3739	C8	6630	A8	9004	B1	9253	D7	9534	C2	9912	B5						
210	B2	2604	B6	3051	D4	3741	C7	6631	C6	9010	C3	9254	D7	9535	C4	9914	B5						
211	A3	2605	A8	3052	D4	3745	D6	6635	C6	9011	C3	9255	D7	9536	C4	9915	B5						
1000	A1	2606	B6	3053	D4	3749	D6	6638	C6	9012	C3	9256	D7	9537	C3	9916	B5						
1001	D1	2611	A7	3054	D5	3802	D6	6639	D8	9013	D3	9257	D7	9539	B3	9917	B5						
1002	D1	2612	A8	3075	E4	3812	E6	6641	B8	9014	D3	9258	D5	9540	C3	9918	B5						
1003	C1	2613	A6	3077	D4	3902	A3	6646	C7	9015	D3	9259	D8	9541	D3	9919	B5						
1004	C1	2618	A6	3081	D5	3905	B4	6660	C7	9016	D3	9260	E8	9542	C1	9920	C4						
1045	A1	2619	A6	3084	E4	3906	B3	6663	B8	9017	D3	9261	E8	9550	B1	9930	A3						
1081	D4	2621	B6	3093	E4	3908	B3	6664	C8	9018	D3	9262	E8	9551	B1	9931	A3						
1085	B1	2624	A6	3094	E5	3917	A3	6668	C8	9019	D3	9263	E8	9552	B1	9939	C5						
1102	E4	2625	A6	3095	D5	3920	A5	6670	C8	9020	D3	9264	D7	9561	B1	9948	C5						
1125	E8	2627	C7	3152	E7	3922	A5	6700	C7	9021	D3	9273	E6	9562	B1	9949	B5						
1145	E7	2629	B6	3162	D6	3924	A5	6719	C7	9022	D3	9274	E6	9605	A6	9952	A3						
1158	D7	2630	B6	3246	D7	3931	C6	6731	C7	9023	D3	9275	E6	9606	B6	9954	A3						
1165	D7	2631	B8	3250	D8	3941	A4	6734	D8	9024	C3	9276	E5	9607	B6	9955	B3						
1167	D7	2633	A7	3254	D7	3946	B4	6735	C6	9025	C3	9277	E5	9608	C6	9956	B4						
1168	D7	2634	A7	3274	D6	3947	B4	6739	C6	9026	C3	9282	D6	9609	B6	9957	A5						
1189	E6	2635	B6	3290	E5	3948	B4	6741	C6	9027	D3	9283	D5	9610	B6	M01	D4						
1190	E6	2636	B6	3292	E5	3949	B5	6742	C7	9028	D4	9284	E5	9611	C7	M03	D3						
1191	E6	2650	A8	3306	D5	3950	A3	6743	C6	9029	D4	9286	D5	9612	B6	M05	E5						
1192	E6	2651	A8	3307	D5	3959	A5	6744	D6	9030	D4	9287	D5	9613	B6	M06	D3						
1430	C3	2656	B8	3308	D5	3962	A5	6760	A2	9031	C4	9288	E5	9614	B6	M07	E5						
1431	D2	2660	C7	3323	D5	3964	C5	6903	B4	9032	C4	9289	E5	9615	B6	M08	C1						
1754	B1	2661	C8	3335	E7	3980	C5	6904	B3	9033	C4	9290	E5	9616	C6	M09	B1						
1760	B2	2662	B6	3336	E7	3991	A5	6906	A6	9035	C4	9292	E5	9619	B8	M10	D5						
1901	B3	2663	C8	3464	B3	3994	B5	6908	A4	9040	D4	9301	D5	9638	C6	M11A	E7						
1905	B5	2664	C8	3561	B1	3995	A5	6910	A4	9041	D4	9302	D5	9646	C7	M11B	E7						
1906	B5	2665	B8	3562	B1	5080	E4	6911	A5	9042	D4	9303	D5	9660	C7	M12A	E6						
1910	C6	2700	C7	3571	B1	5081	E4	6913	B5	9044	D5	9304	D5	9665	A7	M12B	E4						
2078	B1	2729	C6	3572	B2	5090	D4	6914	B4	9045	D5	9305	C6	9666	C8	M12C	C4						
2081	D5	2730	C7	3600	C6	5100	E7	6917	B4	9046	D5	9306	D6	9668	C8	M13A	D6						
2093	D5	2731	C7	3601	B6	5104	E4	6918	C4	9054	D5	9307	D6	9669	C6	M13B	E4						
2111	E4	2732	C7	3602	A7	5145	E7	6920	B3	9060	E4	9308	D6	9671	C5	M13C	D3						
2113	E5	2733	D7	3603	B6	5147	E7	6930	A3	9061	E4	9312	D6	9672	A8	M18	A8						
2125	E8	2734	D8	3608	B8	5160	E7	6931	A3	9063	E4	9323	D5	9673	A8	M20	E5						
2126	E8	2735	C7	3609	B8	5161	D7	6932	A3	9064	E4	9430	C2	9675	A8	M22	C3						
2154	E7	2736	C8	3610	A8	5168	D6	6933	A3	9071	E4	9432	C2	9680	A7	M23	C1						
2156	E7	2737	C7	3611	A8	5315	D5	6935	B3	9072	E4	9433	C2	9681	B8	M24	D8						
2170	D6	2742	C7	3612	A8	5350	E4	6940	C5	9073	D4	9434	C2	9682	A8	M25	D6						
2187	D7	2743	C7	3613	A8	5430	C3	6950	B4	9074	E4	9499	E4	9683	A6	M25A	E5						
2250	D8	2764	A2	3617	A7	5431	B3	6951	B3	9075	E4	9500	B2	9685	B6	M25B	E7						
2290	D5	2819	E6	3628	B8	5432	C3	6952	B3	9081	D5	9501	B2	9687	B8	M26A	E6						
2322	D6	2822	E7	3629	A8	5601	B6	6955	B5	9082	E4	9502	C1	9688	B6	M26B	E7						
2323	D5	2904	A3	3630	A6	5610	A7	6960	B4	9084	E4	9503	B2	9689	C5	M27A	D7						
2350	E4	2905	A3	3631	A7	5611	A7	6992	B3	9117	E4	9504	B2	9690	C6	M27B	D7						
2435	B2	2906	A4	3632	A8	5620	A7	7000	D4	9121	D6	9505	B2	9691	C7	M28	E5						
2436	B2	2908	B3	3635	B6	5621	B6	7088	E4	9122	D6	9506	B2	9692	C7	M30	D5						
2439	C3	2911	A5	3636	B6	5622	A8	7110	E4	9123	D6	9507	C2	9693	C7	M40	D3						
2440	B2	2912	A3	3637	B6	5630	B7	7150	E6	9124	D6	9508	C2	9694	C8	M41	D2						
2442	B2	2913	A5	3638	A8	5643	B8	7250	D8	9125	D6	9509	C2	9695	B8	M42	B2						
2443	B2	2914	A5	3639	B6	5660	C7	7275	E5	9126	D6	9510	C2	9696	C7	M43A	B2						
2445	B2	2915	A5	3643	B8	5662	C7	7430	C2	9130	E8	9511	C2	9697	B7	M43B	C1						
2449	B1	2916	B5	3645	C6	5733	C7	7431	B3	9132	E8	9512	C2	9738	C7	M44A	B2						
2458	B1	2917	B5	3647	C7	5760	B2	7436	D2	9145	E7	9513	C3	9739	D7	M44B	C1						
2466	C3	2918	B4	3650	C7	5761	B2	7437	C2	9149	E7	9514	C3	9780	C6	M45A	D2						
2468	C2	2919	B5	3660	C7	5906	A5	7550	C4	9150	E7	9515	B3	9781	C6	M45B	C1						
2477	D1	2920	A5	3661	C7	5907	B5	7553	B1	9151	E7	9516	C3	9782	C6	M46	C1						
2478	D1	2922	B4	3663	C8	5908	B5	7554	B1	9152	E7	9517	C3	9783	C6	M47A	D2						
2486	B1	2923	B5	3664	C8	5909	B5	7610	A8	9154	E7	9518	C3	9784	C6	M47B	C1						
2487	D2	2924	C4	3665	A8	5910	C4	7620	A7	9160	D6	9519	C4	9785	C7	M55	C3						
2488	D2	2925	B4	3666	C8	5911	A6	7629	B8	9161	D6	9520	C3	9786	C7	M56	C3						
2489	D1	2931	C6	3668	C8	5912	A5	7700	D7	9162	D6	9521	C3	9787	C6	M57	C3						
2492	C2	2935	B5	3708	D7	5930	B5	7743	C6	9163	D6	9522	D3	9788	C7	M60	A8						
2493	D2	2937	C5	3715	C7	6081	D5	7745	C6	9168	D6	9523	D3	9789	C7	M61	C6						
2494	D2	2938	C5	3716	C7	6090	D4	7748	D6	9187	E6	9524	C2	9901	C5	M64	C8						
2496	D2	2971	A6	3718	C7	6145	E7	7900	B3	9197	E5	9525	C2	9902	C5	M67	C7						
2520	D2	2975	B5	3729	C6	6318	D5	7902	A5	9198	E5	9526	C2	9903	C5	M68	A7						
2553	B3	2986	B4	3730	D7	6431	C3	7904	B6	9200	D6	9527	C2	9904	C5	M69	C8						
2554	C3	2987	B3	3733	C7	6621	A6	7907	C5	9201	D8	9528	D2	9905	C5								

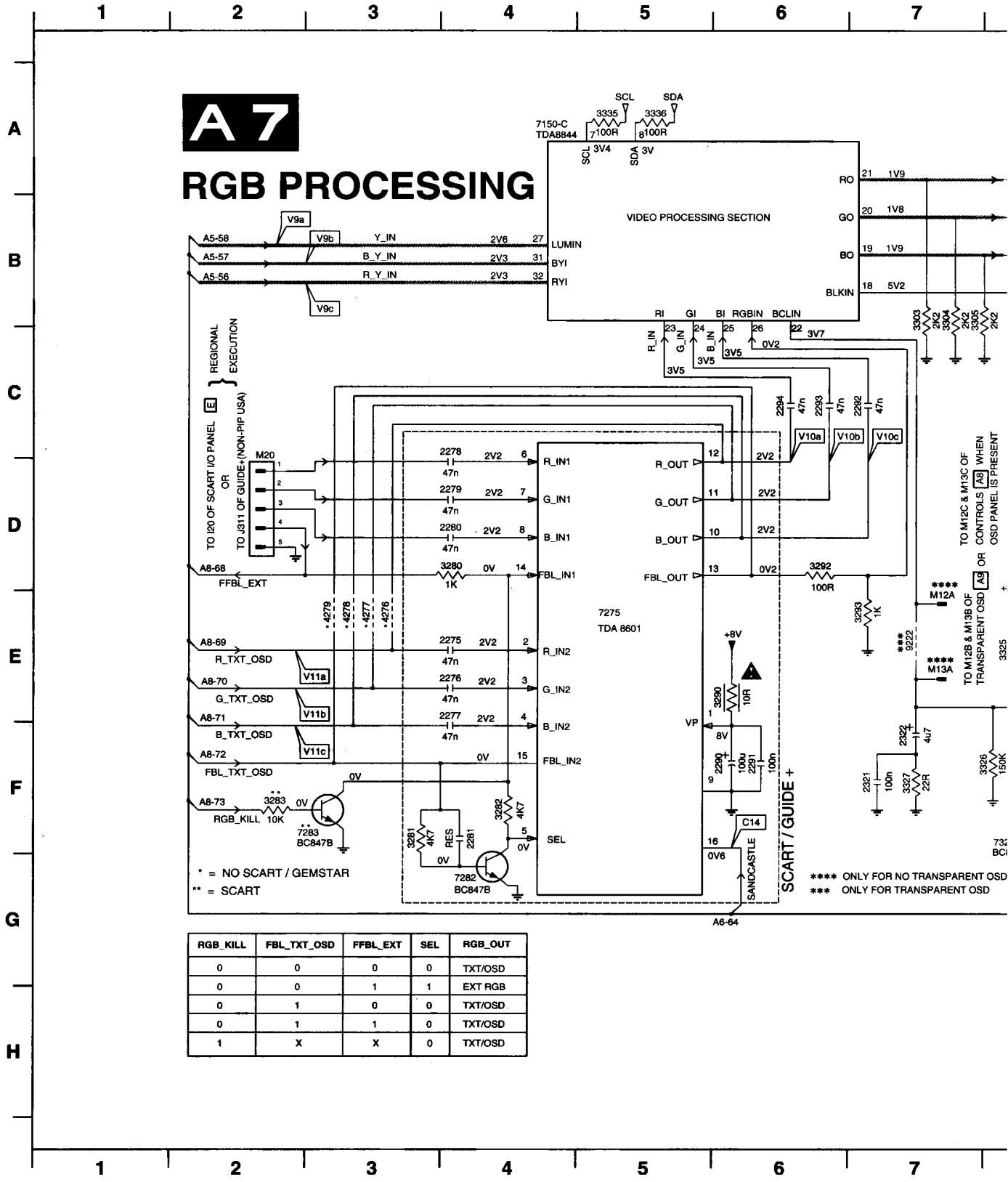
2810 D4	2813 C1	2816 A2	2819 A1	2822 C2	3802 B4	3806 D2	3809 C2	3812 C1	7150-D B2
2811 B3	2814 B3	2817 B1	2820 C2	3800 C1	3804 B2	3807 D3	3810 D3	3813 C2	7800 B1
2812 B4	2815 A3	2818 D1	2821 C3	3801 C4	3805 A4	3808 D3	3811 C3	3814 B4	



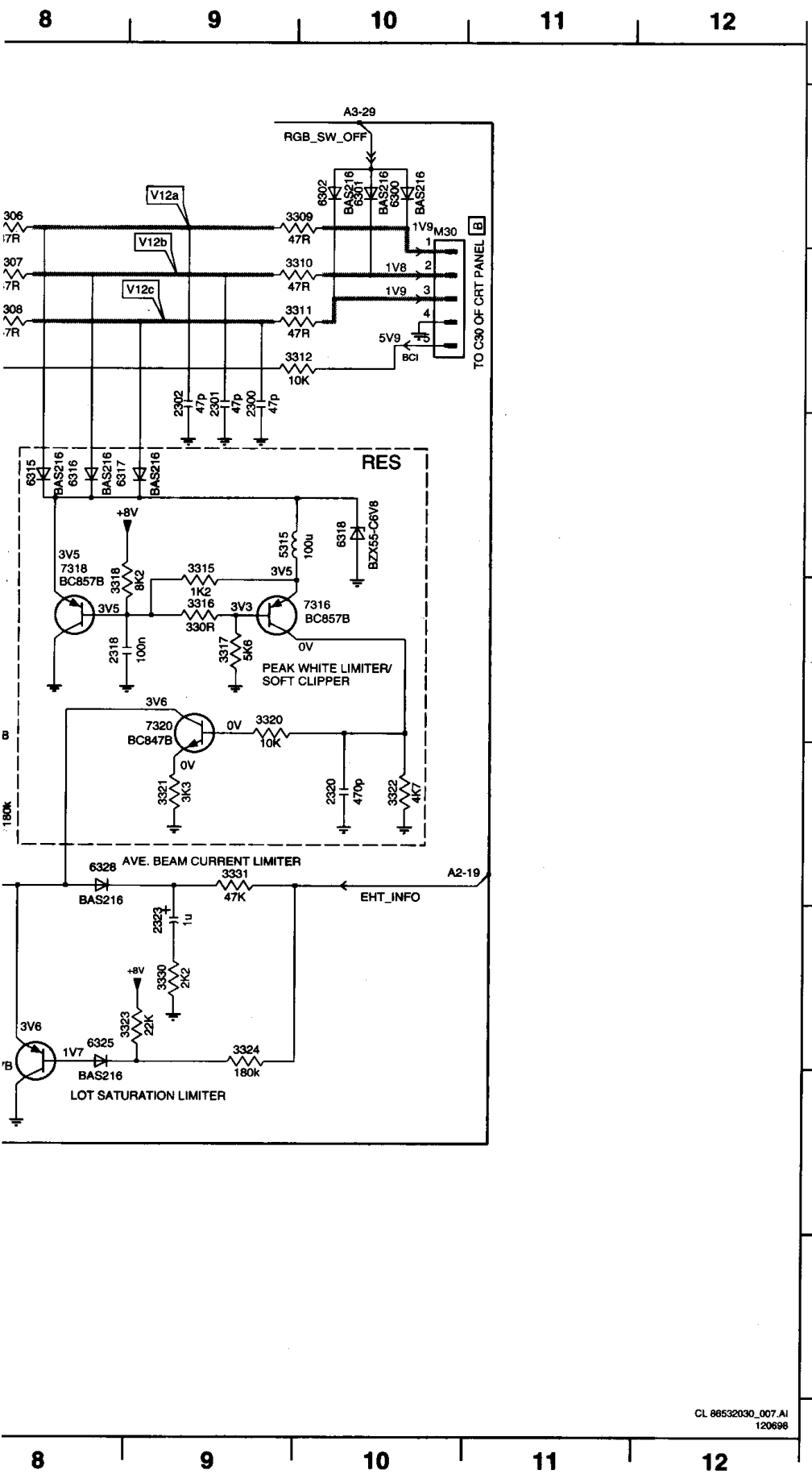
12 2.2V DC



OSC_A6.ai


A 7
RGB PROCESSING
VIDEO PROCESSING SECTION
7275
TDA 8601
SCART / GUIDE +
SANDCASTLE
REGIONAL EXECUTION
TO I20 OF SCART I/O PANEL OR TO J311 OF GUIDE+(NON-PIP USA)
TO M12C & M13C OF A8 CONTROLS WHEN OSD PANEL IS PRESENT
TO M12B & M13B OF A8 TRANSPARENT OSD
* = NO SCART / GEMSTAR
** = SCART
**** ONLY FOR NO TRANSPARENT OSD
*** ONLY FOR TRANSPARENT OSD

RGB_KILL	FBL_TXT_OSD	FFBL_EXT	SEL	RGB_OUT
0	0	0	0	TXT/OSD
0	0	1	1	EXT RGB
0	1	0	0	TXT/OSD
0	1	1	0	TXT/OSD
1	X	X	0	TXT/OSD



M20 D2
M30 B10
2275 E4
2276 E4
2277 F4
2278 D4
2279 D4
2280 D4
2281 G4
2290 F6
2291 F6
2292 C7
2293 C6
2294 C6
2300 C9
2301 C9
2302 C9
2318 D8
2320 E10
2321 F7
2322 F7
2323 F9
3280 D4
3281 G3
3282 F4
3283 F2
3290 E6
3292 D6
3293 E7
3303 C7
3304 C7
3305 C7
3306 A8
3307 B8
3308 B8
3309 A10
3310 B10
3311 B10
3312 B10
3315 D9
3316 D9
3317 D9
3318 D8
3320 D9
3321 E9
3322 E10
3323 F9
3324 G9
3325 E8
3326 F8
3327 F7
3330 F9
3331 E9
3335 A5
3336 A5
4276 E3
4277 E3
4278 E3
4279 E3
5315 C9
6300 A10
6301 A10
6302 A10
6315 C8
6316 C8
6317 C8
6318 C10
6325 G8
6328 E8
7150-C A4
7282 G4
7283 G2
7316 D10
7318 D8
7320 E9
7325 G8
9222 E7
M12A E7
M13A E7

C14
1V / div DC
20µs / div

V12a
0.5V / div DC
20µs / div

V9a
0.5V / div DC
20µs / div

V12b
0.5V / div DC
20µs / div

V9b
0.5V / div DC
20µs / div

V12c
0.5V / div DC
20µs / div

V9c
0.5V / div DC
20µs / div

V10a TXT on
0.5V / div AC
2µs / div

V10b TXT on
0.5V / div AC
2µs / div

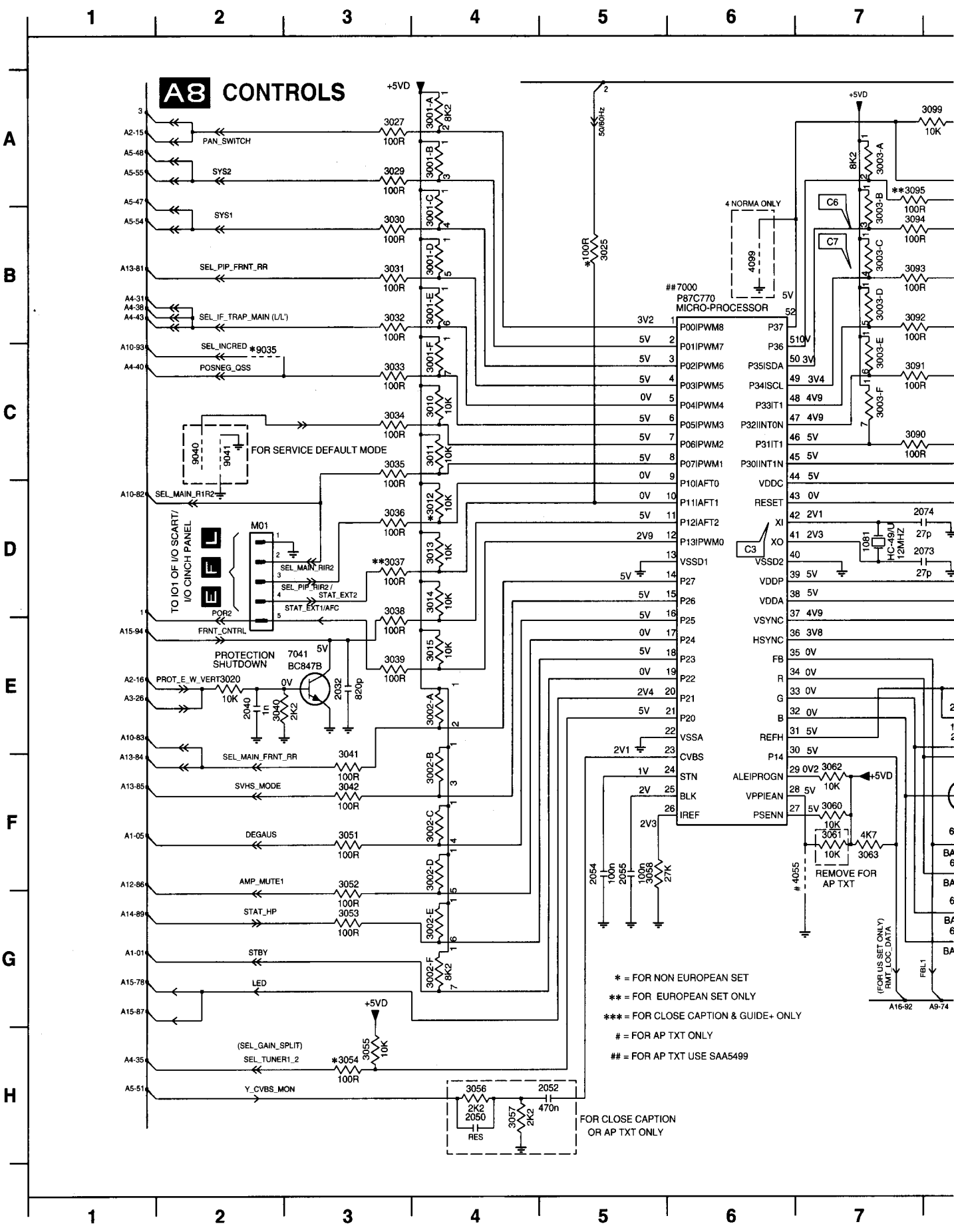
V10c TXT on
0.5V / div AC
2µs / div

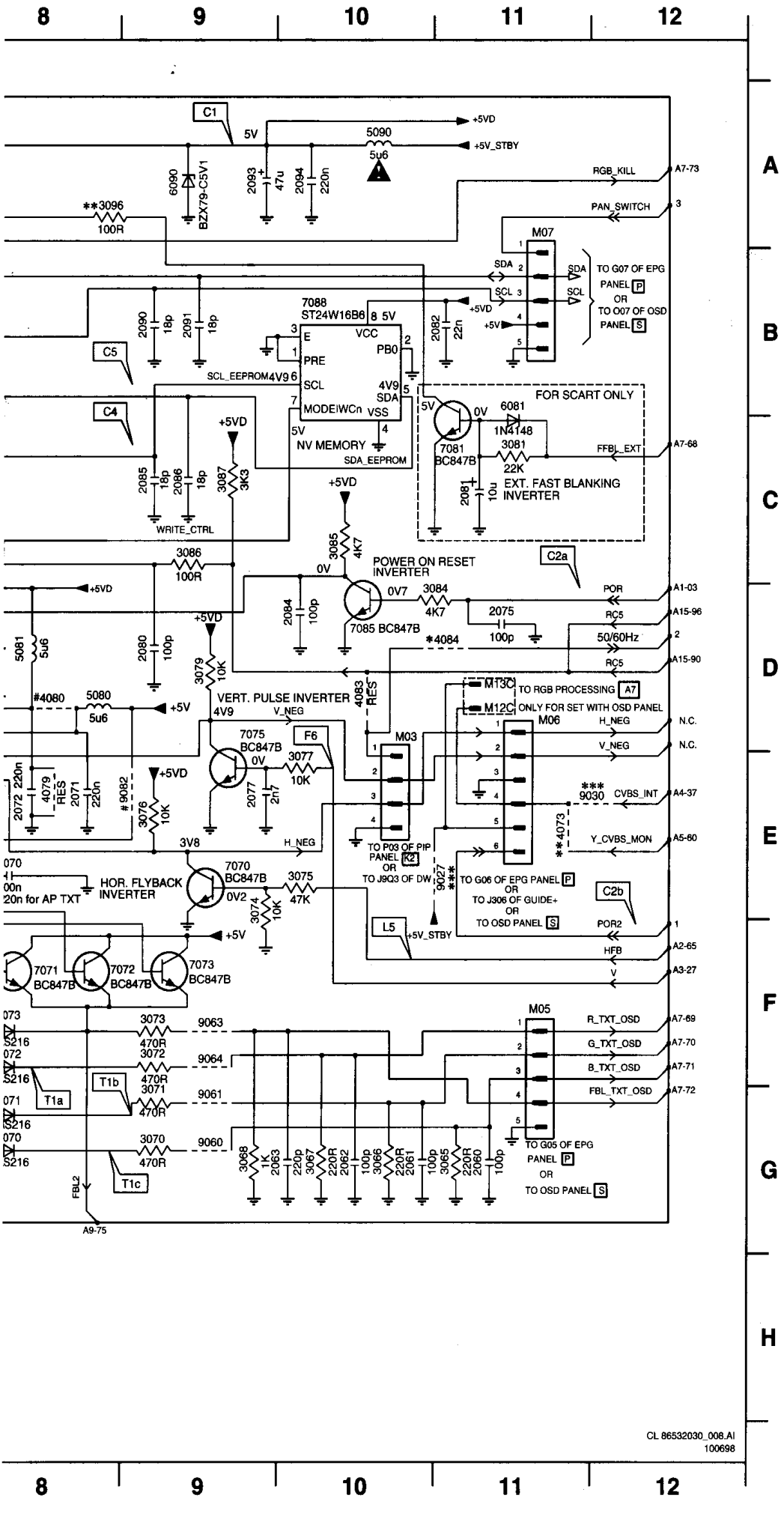
V11a TXT on
0.5V / div AC
2µs / div

V11b TXT on
0.5V / div AC
2µs / div

V11c TXT on
0.5V / div AC
2µs / div

OSC_A7.ai


A8 CONTROLS
+5VD
PAN_SWITCH
SYS2
SYS1
SEL_PIP_FRNT_RR
SEL_IF_TRAP_MAIN (L/L')
SEL_INCRED *9035
POSNEG_QSS
FOR SERVICE DEFAULT MODE
SEL_MAIN_R1R2
TO IO1 OF I/O SCART/ I/O CINCH PANEL
SEL_MAIN_RIR2
SEL_PIP_RIR2 / STAT_EXT2
STAT_EXT1/AFC
FRNT_CNTRL
PROTECTION SHUTDOWN
BC847B
PROT_E_W_VERT
SEL_MAIN_FRNT_RR
SVHS_MODE
DEGAUS
AMP_MUTE1
STAT_HP
STBY
LED
(SEL_GAIN_SPLIT)
SEL_TUNER1_2
Y_CVBS_MON
FOR CLOSE CAPTION OR AP TXT ONLY
##7000
P87C770
MICRO-PROCESSOR
P00IPWM8
P01IPWM7
P02IPWM6
P03IPWM5
P04IPWM4
P05IPWM3
P06IPWM2
P07IPWM1
P10IAFT0
P11IAFT1
P12IAFT2
P13IPWM0
VSSD1
P27
P26
P25
P24
P23
P22
P21
P20
VSSA
CVBS
STN
BLK
IREF
P37
P36
P35ISDA
P34ISCL
P33IT1
P32IINT0N
P31IT1
P30IINT1N
VDDC
RESET
XI
XO
VSSD2
VDDP
VDDA
VSYNC
HSYNC
FB
R
G
B
REFH
P14
ALEIPROGN
VPPIEAN
PSENN
4 NORMA ONLY
REMOVE FOR AP TXT
* = FOR NON EUROPEAN SET
** = FOR EUROPEAN SET ONLY
*** = FOR CLOSE CAPTION & GUIDE+ ONLY
# = FOR AP TXT ONLY
= FOR AP TXT USE SAA5499



M01 D2
M03 D10
M05 F11
M06 D11
M07 A11
1081 D7
2032 E3
2040 E2
2050 H4
2052 H5
2054 F5
2055 F5
2060 G11
2061 G10
2062 G10
2063 G10
2070 E8
2071 E8
2072 E8
2073 D7
2074 D7
2075 D11
2077 E9
2080 D9
2081 C11
2082 B11
2084 D10
2085 C9
2086 C9
2090 B9
2091 B9
2093 A9
2094 A10
3001-A A4
3001-B A4
3001-C B4
3001-D B4
3001-E B4
3001-F C4
3002-A E4
3002-B F4
3002-C F4
3002-D F4
3002-E G4
3002-F G4
3003-A A7
3003-B B7
3003-C B7
3003-D B7
3003-E C7
3003-F C7
3010 C4
3011 C4
3012 D4
3013 D4
3014 D4
3015 E4
3020 E2
3025 B5
3027 A3
3029 A3
3030 B3
3031 B3
3032 B3
3033 C3
3034 C3
3035 C3
3036 D3
3037 D3
3038 D3
3039 E3
3040 E2
3041 F3
3042 F3
3051 F3
3052 F3
3053 G3
3054 H3
3055 H3
3056 H4
3057 H4
3058 F5
3060 F7
3061 F7
3062 F7
3063 F7
3065 G11
3066 G10
3067 G10
3068 G9
3070 G9
3071 F9
3072 F9
3073 F9
3074 E9
3075 E10
3076 E9
3077 E10
3079 D9
3081 C11
3084 D11
3085 C10
3086 C9
3087 C9
3090 C7
3091 C7
3092 B7
3093 B7
3094 B7
3095 A7
3096 A8
3099 A8
4055 F6
4073 E11
4079 E8
4080 D8
4083 D10
4084 D11
4099 B6
5080 D8
5081 D8
5090 A10
6070 G8
6071 G8
6072 F8
6073 F8
6081 B11
6090 A9
7000 B6
7041 E3
7070 E9
7071 F8
7072 F8
7073 F9
7075 D9
7081 C11
7085 D10
7088 B10
9027 E11
9030 E12
9035 C2
9040 C2
9041 C2
9060 G9
9061 G9
9063 F9
9064 F9
9082 E8
M12C D11
M13C D11

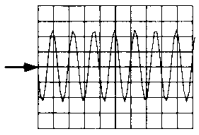
C1 5V DC

C1 5V DC

C2a 2.9V DC

C2a 2.9V DC

C3 12MHz osc

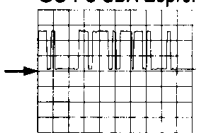


1V / div AC
62.5ns / div

C4 I²C SCL Eepron

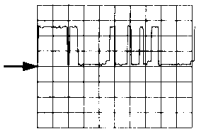
2V / div DC
50µs / div

C5 I²C SDA Eepror



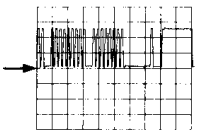
2V / div DC
50µs / div

C6 I²C SDA



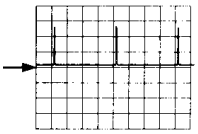
2V / div DC
50µs / div

C7 I²C SCL



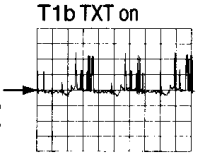
2V / div DC
50µs / div

F6



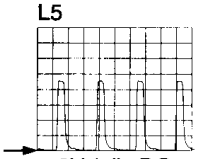
2V / div DC
5ms / div

T1b TXT on



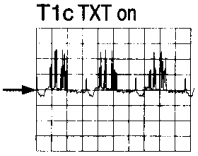
0.2V / div AC
20µs / div

L5



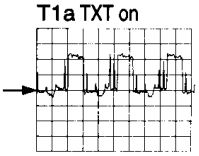
2V / div DC
25µs / div

T1c TXT on



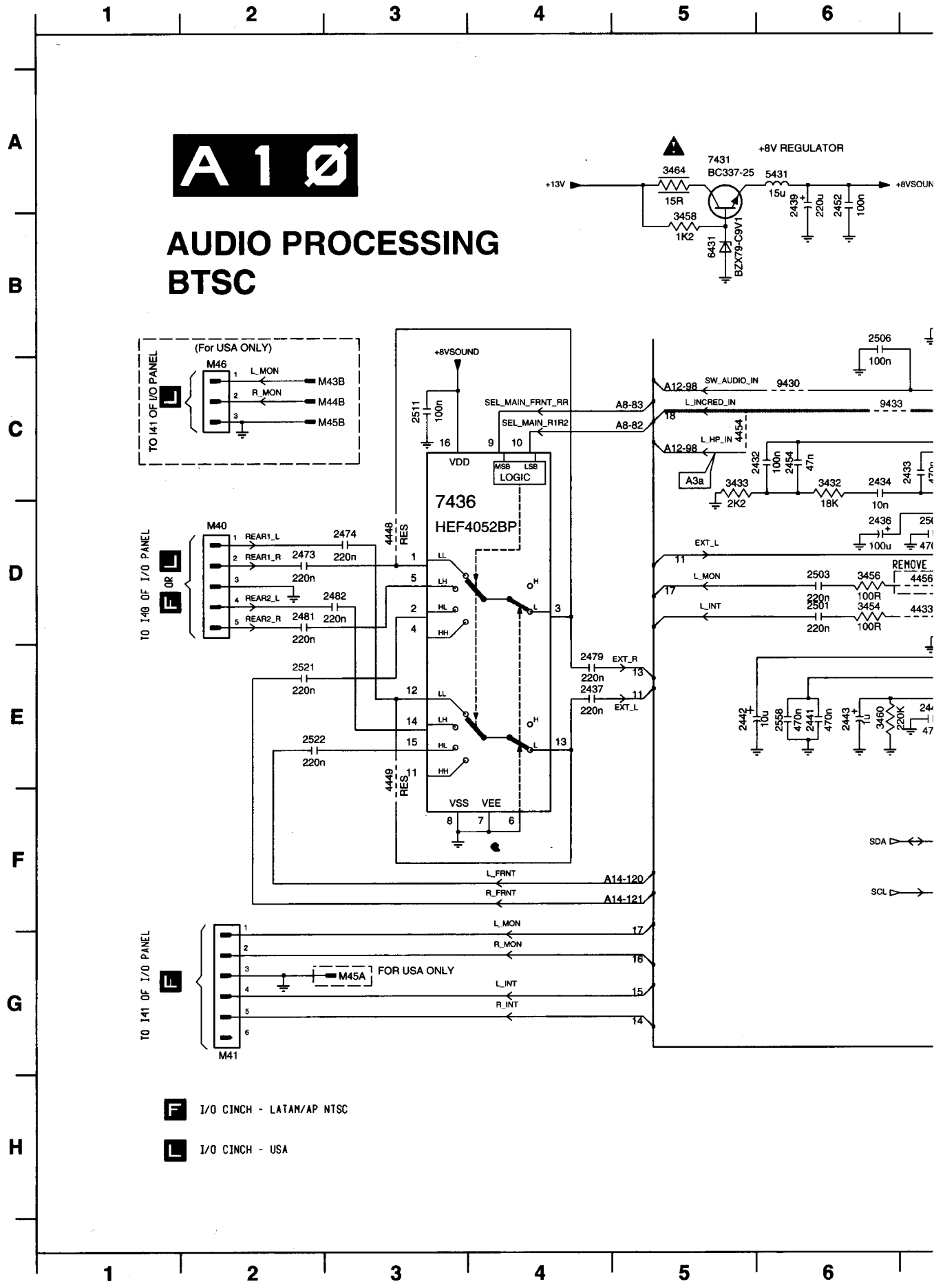
0.2V / div AC
20µs / div

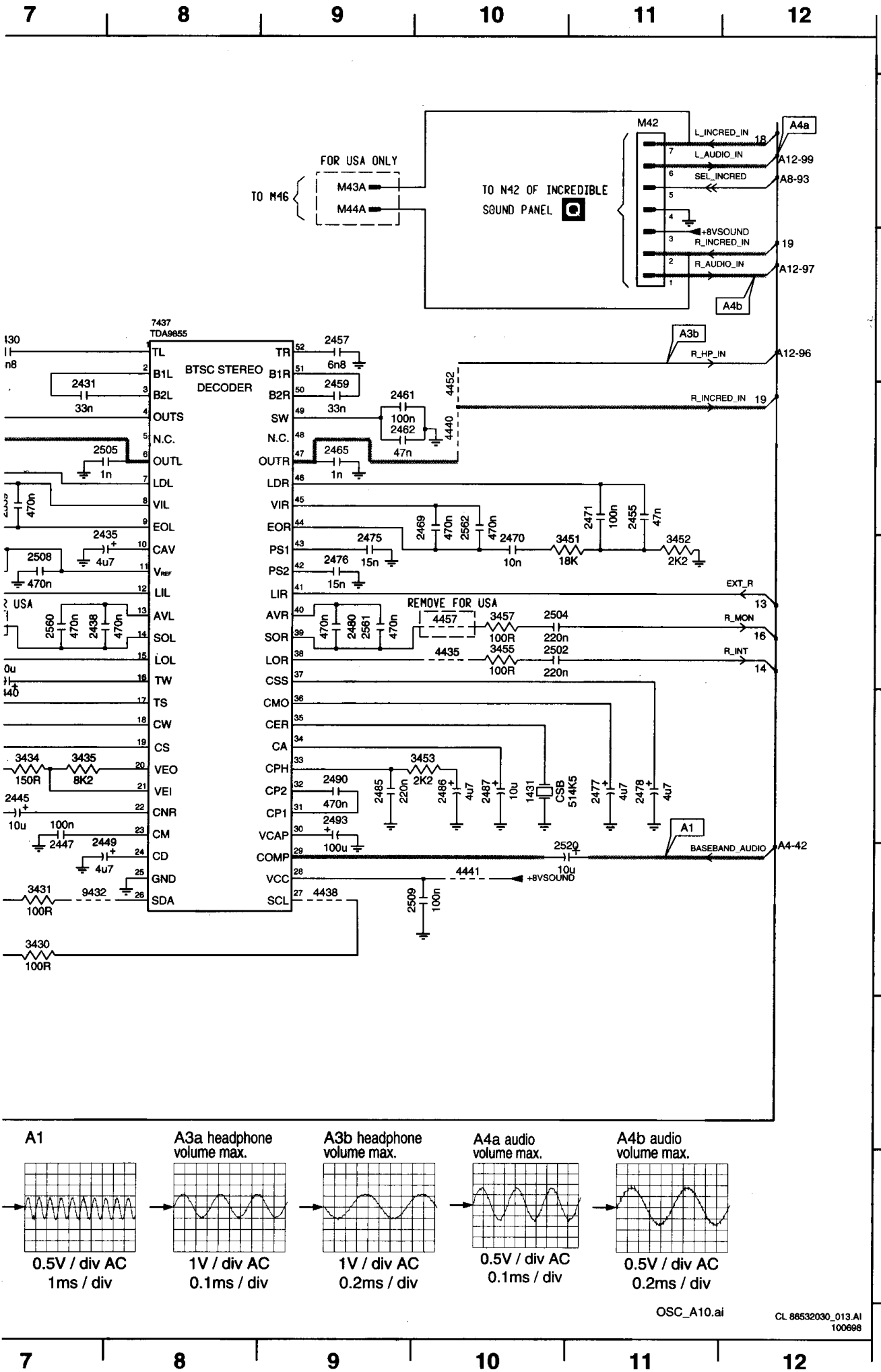
T1a TXT on



0.2V / div AC
20µs / div

OSC_A8.ai


A10
AUDIO PROCESSING
BTSC
+8V REGULATOR
7431
BC337-25
3464
15R
3458
1K2
5431
15u
6431
BZX79-C9V1
+13V
+8VSOUN
2439
220u
2452
100n
(For USA ONLY)
TO I41 OF I/O PANEL
M46
L_MON
R_MON
M43B
M44B
M45B
+8VSOUND
2511
100n
SEL_MAIN_FRNT_RR
SEL_MAIN_R1R2
A8-83
A8-82
VDD
MSB LSB
LOGIC
7436
HEF4052BP
VSS VEE
4448 RES
4449 RES
TO I40 OF I/O PANEL
OR
M40
REAR1_L
REAR1_R
REAR2_L
REAR2_R
2474
2473
2482
2481
220n
2521
2522
2479
2437
EXT_R
EXT_L
A12-98
SW_AUDIO_IN
9430
L_INCRED_IN
9433
L_HP_IN
4454
A3a
3433
2K2
3432
18K
2434
10n
2432
2454
47n
2433
2436
100u
2506
100n
REMOVE
2503
3456
100R
2501
3454
100R
4433
4456
2442
10u
2558
470n
2441
470n
2443
1u
3460
220K
L_FRNT
R_FRNT
A14-120
A14-121
SDA
SCL
TO I41 OF I/O PANEL
M41
M45A
FOR USA ONLY
L_MON
R_MON
L_INT
R_INT
F I/O CINCH - LATAM/AP NTSC
L I/O CINCH - USA



A1

0.5V / div AC
1ms / div

A3a headphone volume max.

1V / div AC
0.1ms / div

A3b headphone volume max.

1V / div AC
0.2ms / div

A4a audio volume max.

0.5V / div AC
0.1ms / div

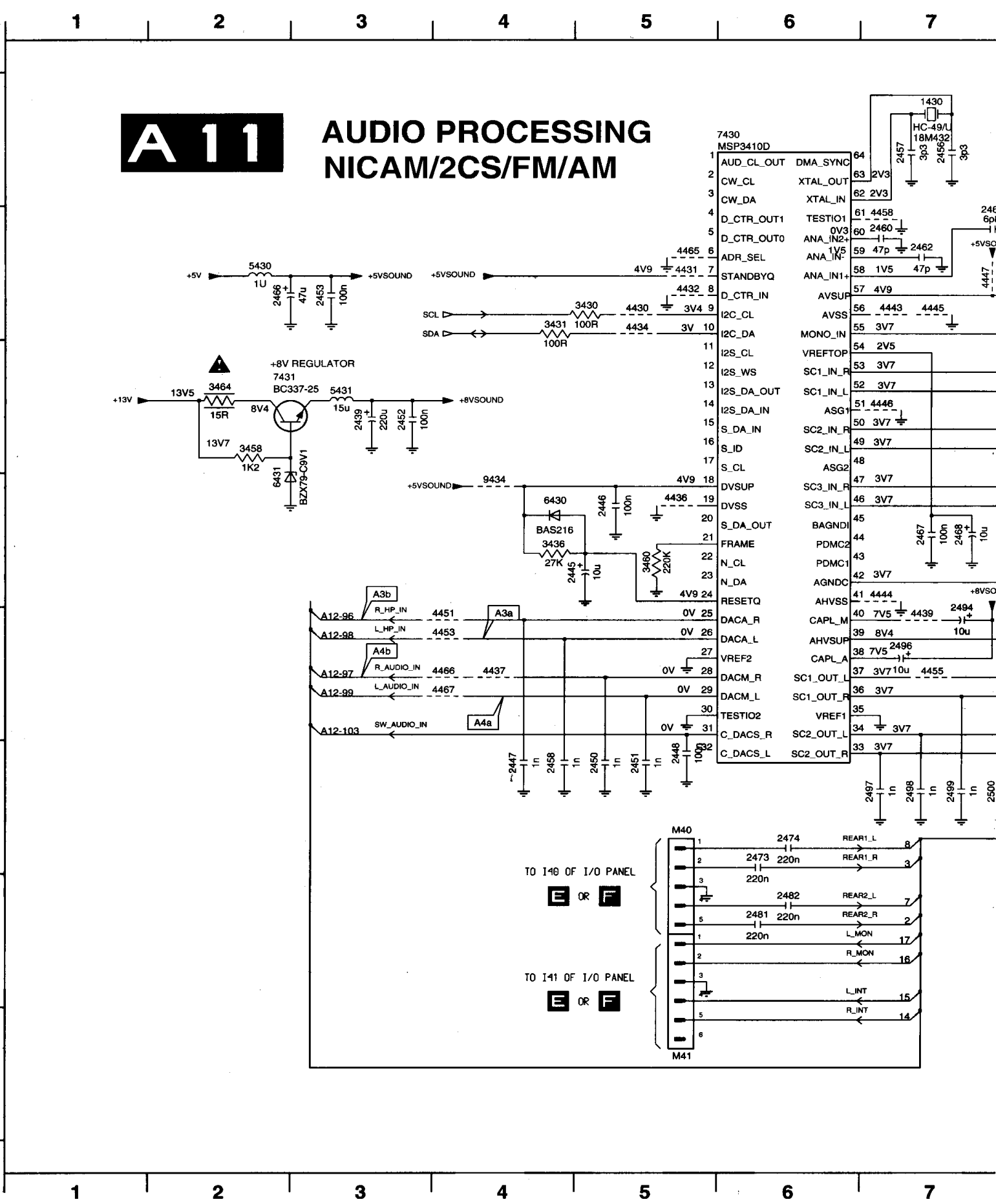
A4b audio volume max.

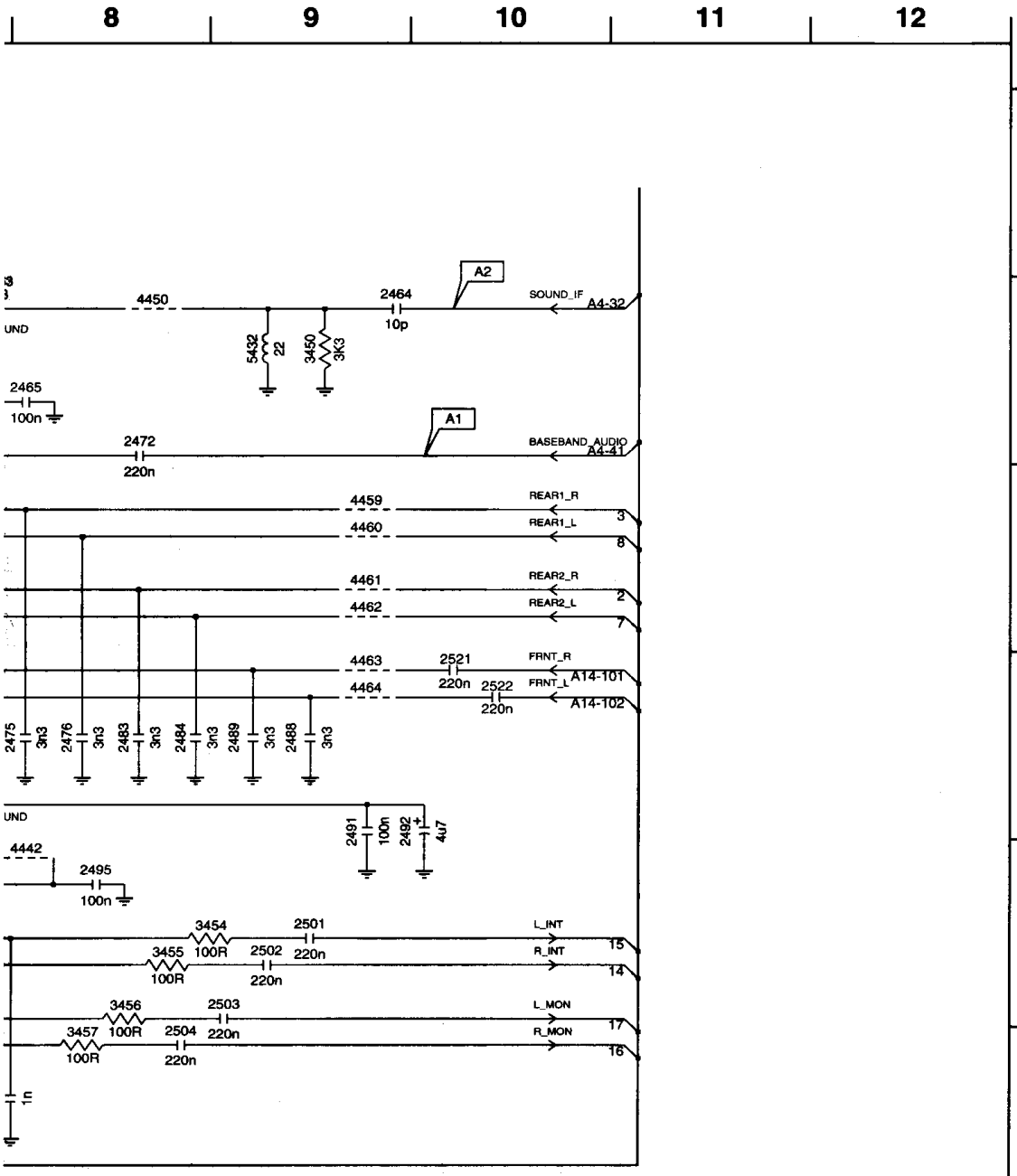
0.5V / div AC
0.2ms / div

OSC_A10.ai

CL 86532030_013.AI
100698

M40 D2
M41 G2
M42 A11
M46 C2
1431 E10
2430 B7
2431 C7
2432 C6
2433 C7
2434 C6
2435 D7
2436 D6
2437 E4
2438 D7
2439 A6
2440 E7
2441 E6
2442 E5
2443 E6
2444 E7
2445 E7
2447 E7
2449 F7
2452 A6
2454 C6
2455 C11
2457 B9
2459 C9
2461 C9
2462 C9
2465 C9
2469 C10
2470 D10
2471 C11
2473 D2
2474 D3
2475 D9
2476 D9
2477 E11
2478 E11
2479 E4
2480 D9
2481 D2
2482 D3
2485 E9
2486 E10
2487 E10
2490 E9
2493 E9
2501 D6
2502 D10
2503 D6
2504 D10
2505 C7
2506 B6
2507 D7
2508 D7
2509 F10
2511 C3
2520 F10
2521 E2
2522 E2
2558 E6
2559 C7
2560 D7
2561 D9
2562 C10
3430 F7
3431 F7
3432 C6
3433 C5
3434 E7
3435 E7
3451 D11
3452 D11
3453 E10
3454 D6
3455 D10
3456 D6
3457 D10
3458 B5
3460 E6
3464 A5
4433 D7
4435 D10
4438 F9
4440 C10
4441 F10
4448 D3
4449 E3
4452 C10
4454 C5
4456 D7
4457 D10
5431 A6
6431 B5
7431 A5
7436 D3
7437 B8
9430 C6
9432 F7
9433 C6
M43A A9
M43B C3
M44A A9
M44B C3
M45A G3
M45B C3


A11
AUDIO PROCESSING
NICAM/2CS/FM/AM
7430
MSP3410D
AUD_CL_OUT
CW_CL
CW_DA
D_CTR_OUT1
D_CTR_OUT0
ADR_SEL
STANDBYQ
D_CTR_IN
I2C_CL
I2C_DA
I2S_CL
I2S_WS
I2S_DA_OUT
I2S_DA_IN
S_DA_IN
S_ID
S_CL
DVSUP
DVSS
S_DA_OUT
FRAME
N_CL
N_DA
RESETQ
DACA_R
DACA_L
VREF2
DACM_R
DACM_L
TESTIO2
C_DACS_R
C_DACS_L
DMA_SYNC
XTAL_OUT
XTAL_IN
TESTIO1
ANA_IN2+
ANA_IN-
ANA_IN1+
AVSUP
AVSS
MONO_IN
VREFTOP
SC1_IN_R
SC1_IN_L
ASG1
SC2_IN_R
SC2_IN_L
ASG2
SC3_IN_R
SC3_IN_L
BAGNDI
PDMC2
PDMC1
AGNDC
AHVSS
CAPL_M
AHVSUP
CAPL_A
SC1_OUT_L
SC1_OUT_R
VREF1
SC2_OUT_L
SC2_OUT_R
1430
HC-49/U
18M432
+5V
+5VSOUND
+8V REGULATOR
7431
BC337-25
+13V
+8VSOUND
BAS216
SCL
SDA
A3b
A3a
A4b
A4a
R_HP_IN
L_HP_IN
R_AUDIO_IN
L_AUDIO_IN
SW_AUDIO_IN
A12-96
A12-98
A12-97
A12-99
A12-103
M40
M41
REAR1_L
REAR1_R
REAR2_L
REAR2_R
L_MON
R_MON
L_INT
R_INT
TO I40 OF I/O PANEL
TO I41 OF I/O PANEL
E OR F
E OR F



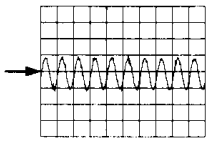
E I/O SCART - EUROPE

F I/O CINCH - AP

CL 86532030_028.AI
100698

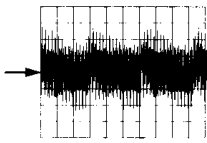
M40 F5
M41 H5
1430 A7
2439 C3
2445 D4
2446 D5
2447 F4
2448 F5
2450 F5
2451 F5
2452 C3
2453 B3
2456 A7
2457 A7
2458 F4
2460 B7
2462 B7
2463 B7
2464 B9
2465 B8
2466 B2
2467 D7
2468 D7
2472 B8
2473 F6
2474 F6
2475 D8
2476 D8
2481 G6
2482 G6
2483 D8
2484 D8
2488 D9
2489 D9
2491 D9
2492 D9
2494 E7
2495 E8
2496 E7
2497 F7
2498 F7
2499 F7
2500 F7
2501 E9
2502 E9
2503 E9
2504 F8
2521 D10
2522 D10
3430 B5
3431 B4
3436 D4
3450 B9
3454 E9
3455 E8
3456 E8
3457 F8
3458 C2
3460 D5
3464 C2
4430 B5
4431 B5
4432 B5
4434 B5
4436 D5
4437 E4
4439 E7
4442 E8
4443 B7
4444 D7
4445 B7
4446 C7
4447 B7
4450 B8
4451 E4
4453 E4
4455 E7
4458 B7
4459 C9
4460 C9
4461 C9
4462 C9
4463 D9
4464 D9
4465 B5
4466 E4
4467 E4
5430 B2
5431 C3
5432 B9
6430 D4
6431 D2
7430 A5
7431 C2
9434 D4

A1



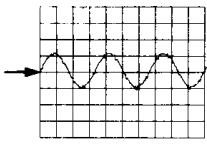
0.5V / div AC
1ms / div

A2



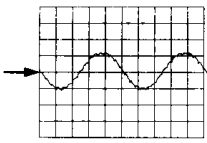
0.1V / div AC
20µs / div

A3a headphone volume max.



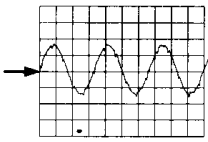
1V / div AC
0.1ms / div

A3b headphone volume max.



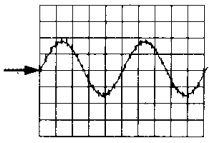
1V / div AC
0.2ms / div

A4a audio volume max.



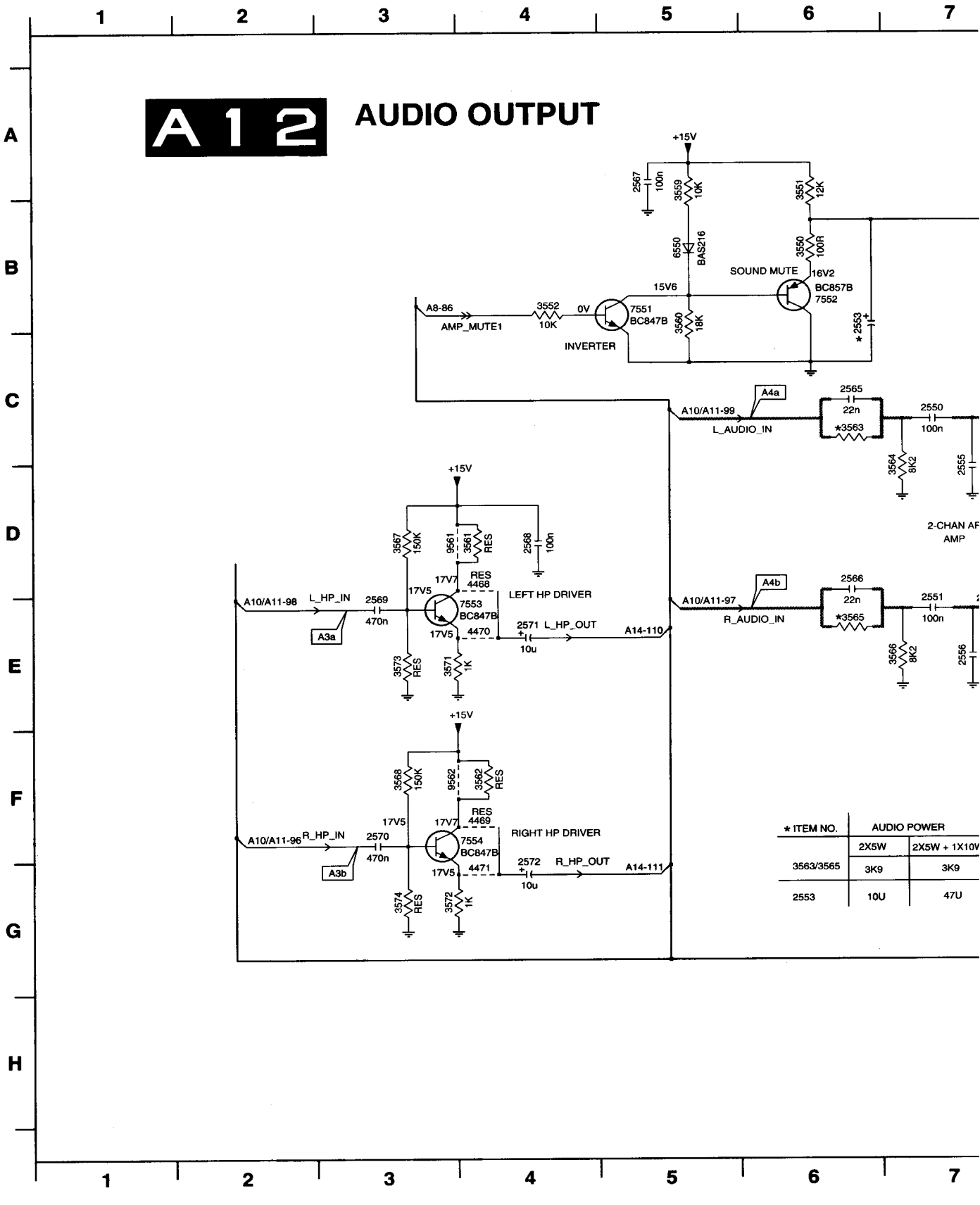
0.5V / div AC
0.1ms / div

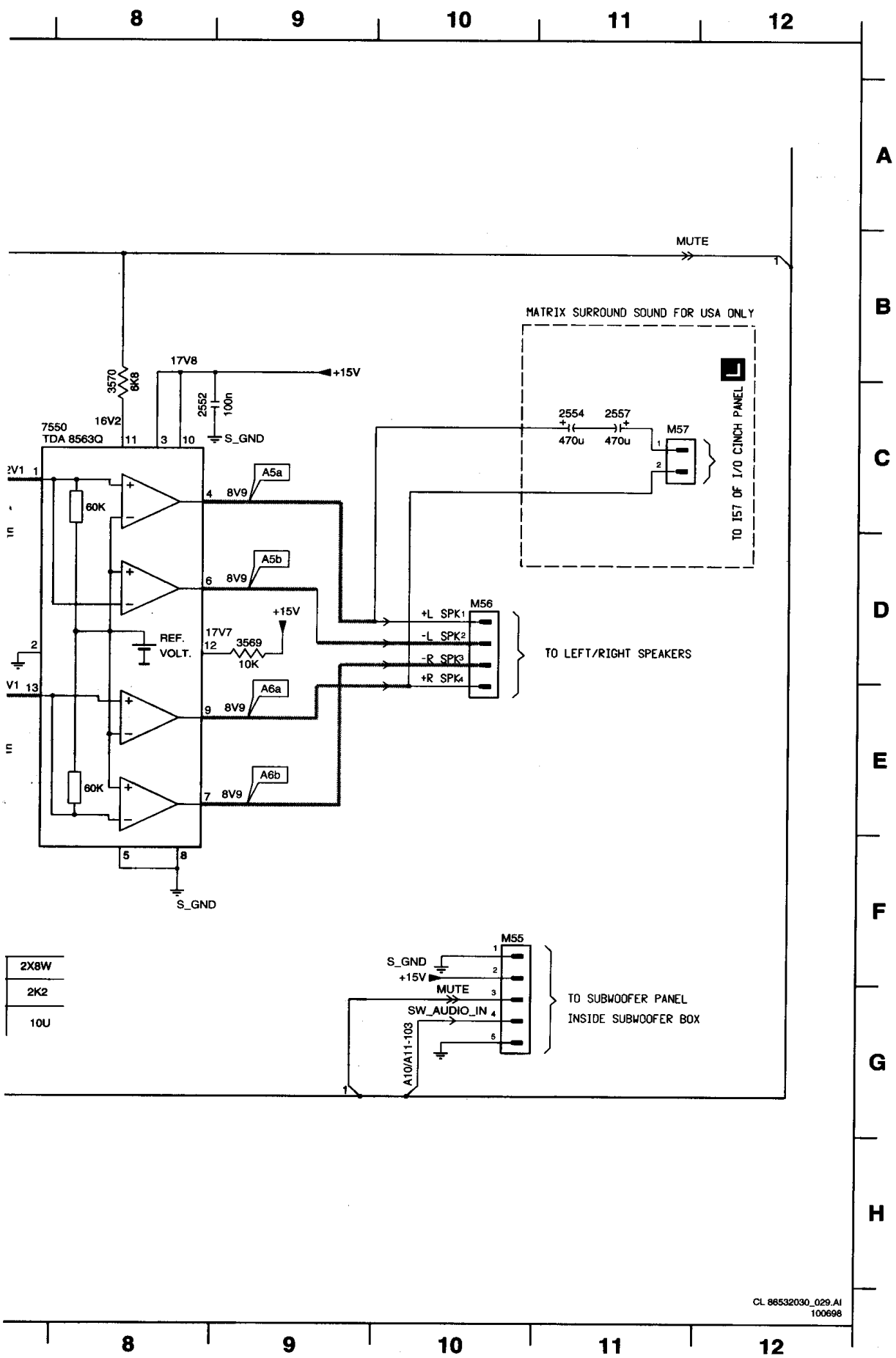
A4b audio volume max.



0.5V / div AC
0.2ms / div

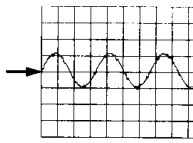
OSC_A11.ai


A12 AUDIO OUTPUT
+15V
2567 100n
3559 10K
3551 12K
6550 BAS216
3550 100R
SOUND MUTE
16V2
BC857B
7552
15V6
A8-86
AMP_MUTE1
3552 10K
0V
7551 BC847B
INVERTER
3560 18K
*2553
A4a
A10/A11-99
L_AUDIO_IN
2565 22n
*3563
2550 100n
3564 8K2
2555
2-CHAN AF AMP
3567 150K
9561
3561 RES
2568 100n
17V7
RES 4468
17V5
7553 BC847B
LEFT HP DRIVER
A10/A11-98
L_HP_IN
2569 470n
A3a
17V5 4470
2571 L_HP_OUT
10u
A14-110
3573 RES
3571 1K
A4b
A10/A11-97
R_AUDIO_IN
2566 22n
*3565
2551 100n
3566 8K2
2556
3568 150K
9562
3562 RES
RES 4469
17V5
17V7
7554 BC847B
RIGHT HP DRIVER
A10/A11-96
R_HP_IN
2570 470n
A3b
17V5 4471
2572 R_HP_OUT
10u
A14-111
3574 RES
3572 1K
* ITEM NO.
AUDIO POWER
2X5W
2X5W + 1X10V
3563/3565
3K9
3K9
2553
10U
47U



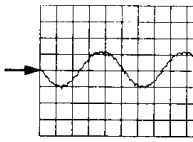
M55 F10
M56 D10
M57 C11
2550 C7
2551 E7
2552 C8
2553 B6
2554 C11
2555 D7
2556 E7
2557 C11
2565 C6
2566 D6
2567 A5
2568 D4
2569 E3
2570 F3
2571 E4
2572 G4
3550 B6
3551 A6
3552 B4
3559 A5
3560 B5
3561 D4
3562 F4
3563 C6
3564 D7
3565 E6
3566 E7
3567 D3
3568 F3
3569 D9
3570 C8
3571 E3
3572 G3
3573 E3
3574 G3
4468 D4
4469 F4
4470 E4
4471 G4
6550 B5
7550 C7
7551 B5
7552 B6
7553 E4
7554 F4
9561 D3
9562 F3

A3a headphone volume max.



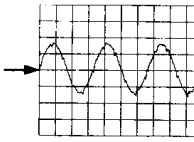
1V / div AC
0.1ms / div

A3b headphone volume max.



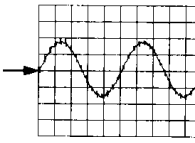
1V / div AC
0.2ms / div

A4a audio volume max.



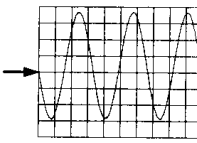
0.5V / div AC
0.1ms / div

A4b audio volume max.



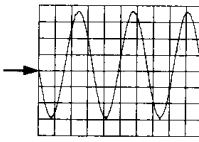
0.5V / div AC
0.2ms / div

A5a



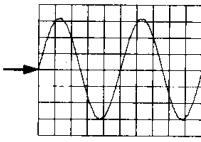
2V / div AC
0.1ms / div

A5b



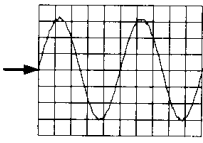
2V / div AC
0.1ms / div

A6a



2V / div AC
0.2ms / div

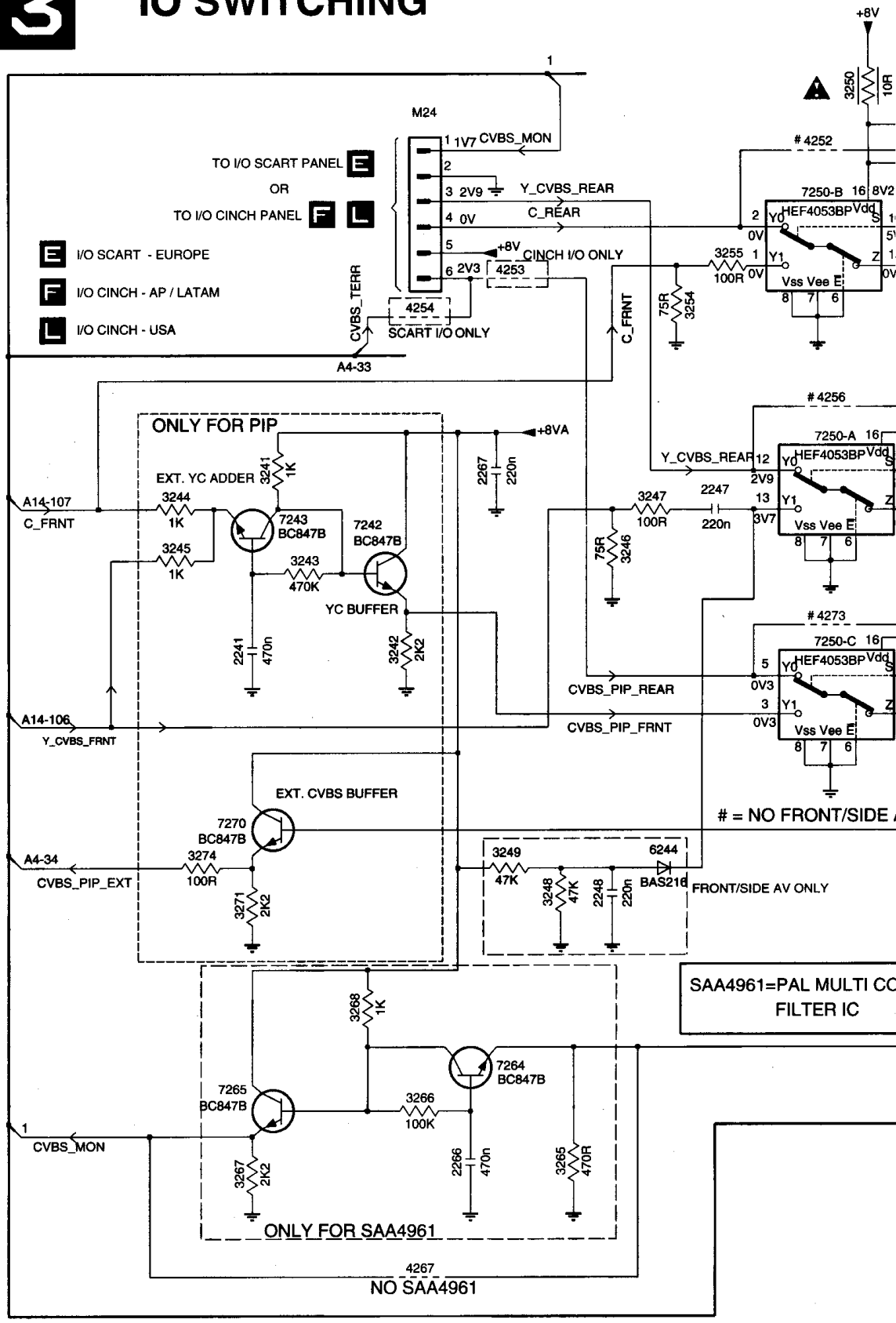
A6b

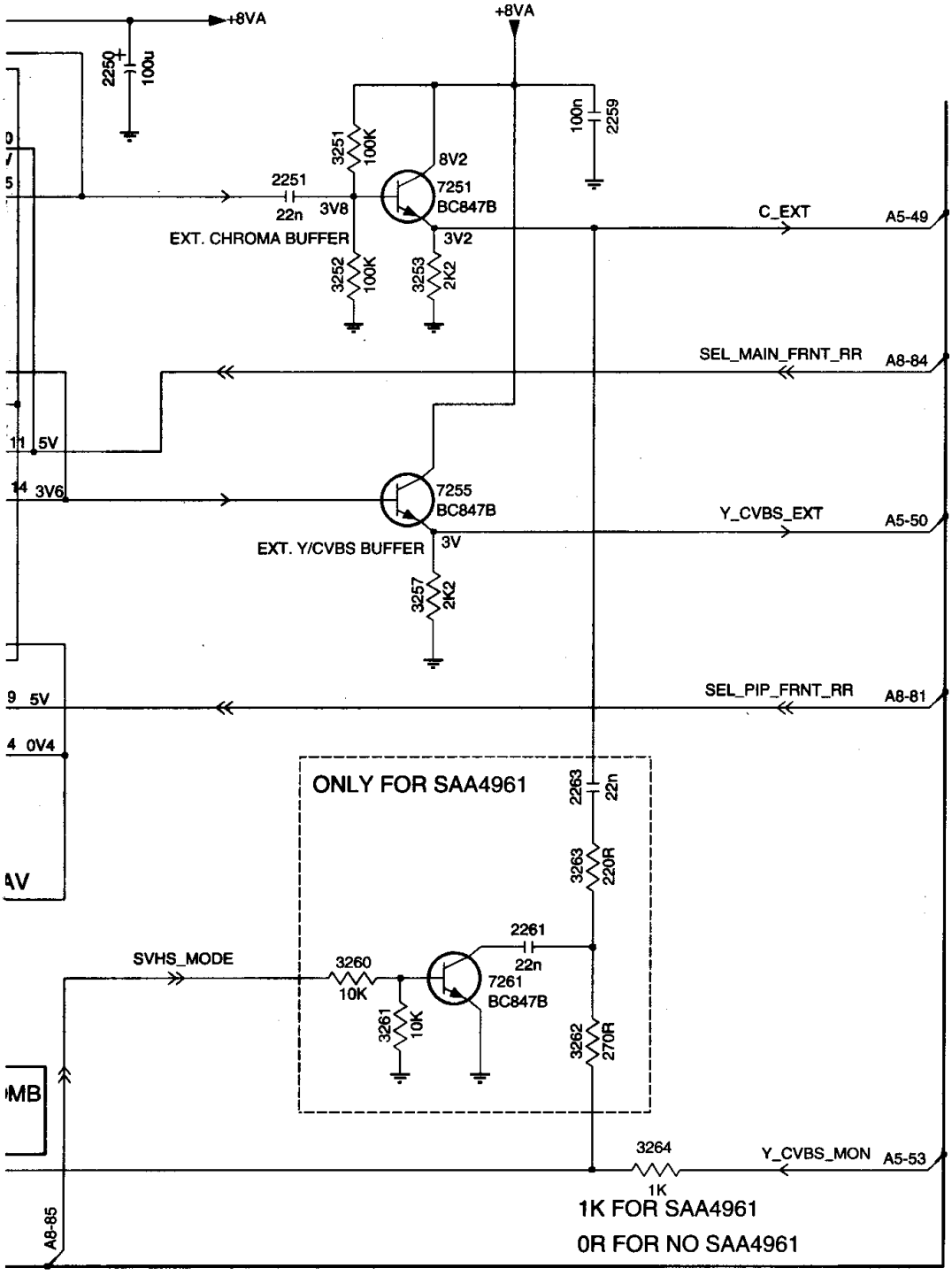


2V / div AC
0.2ms / div

OSC_A12.ai

A13 IO SWITCHING

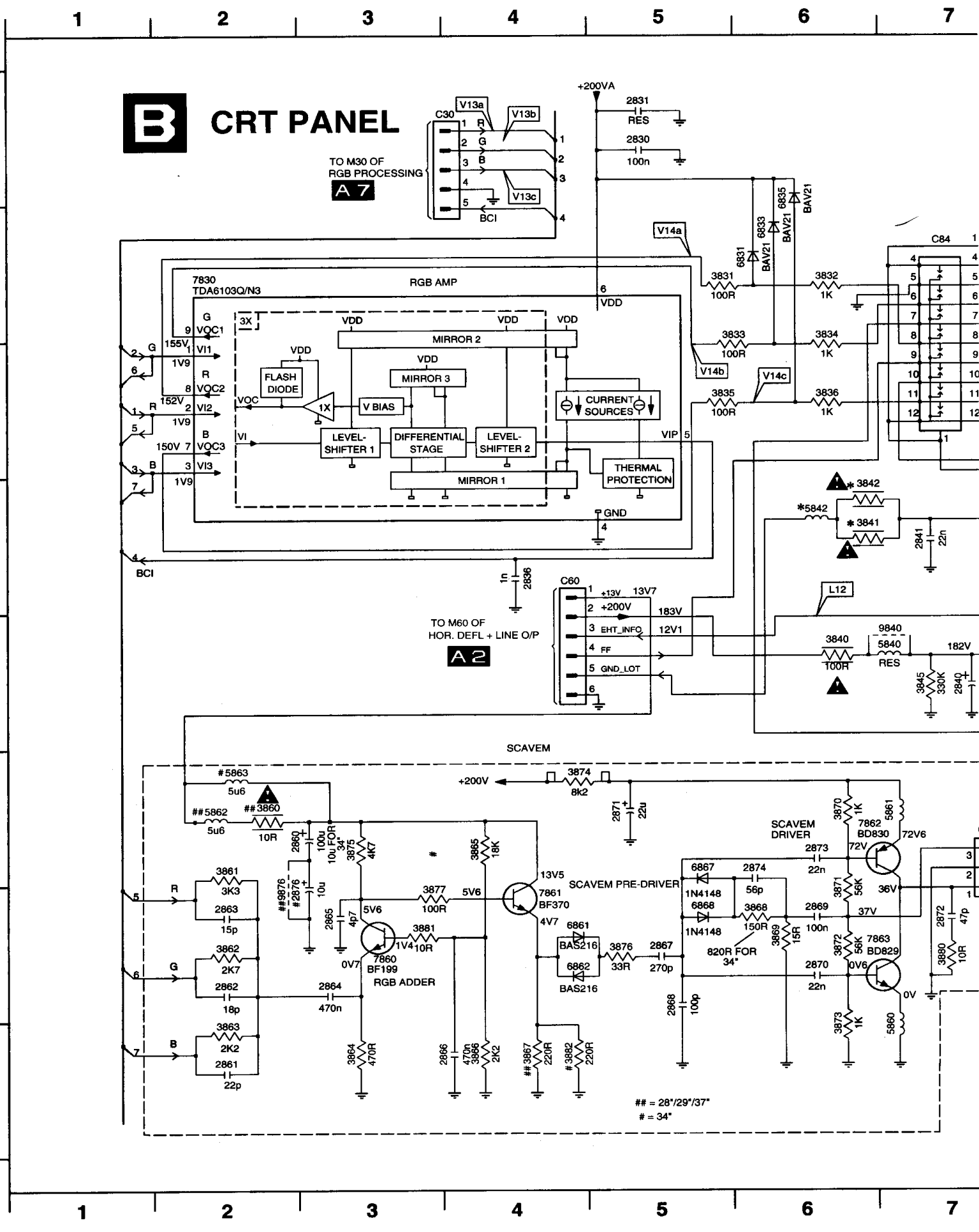


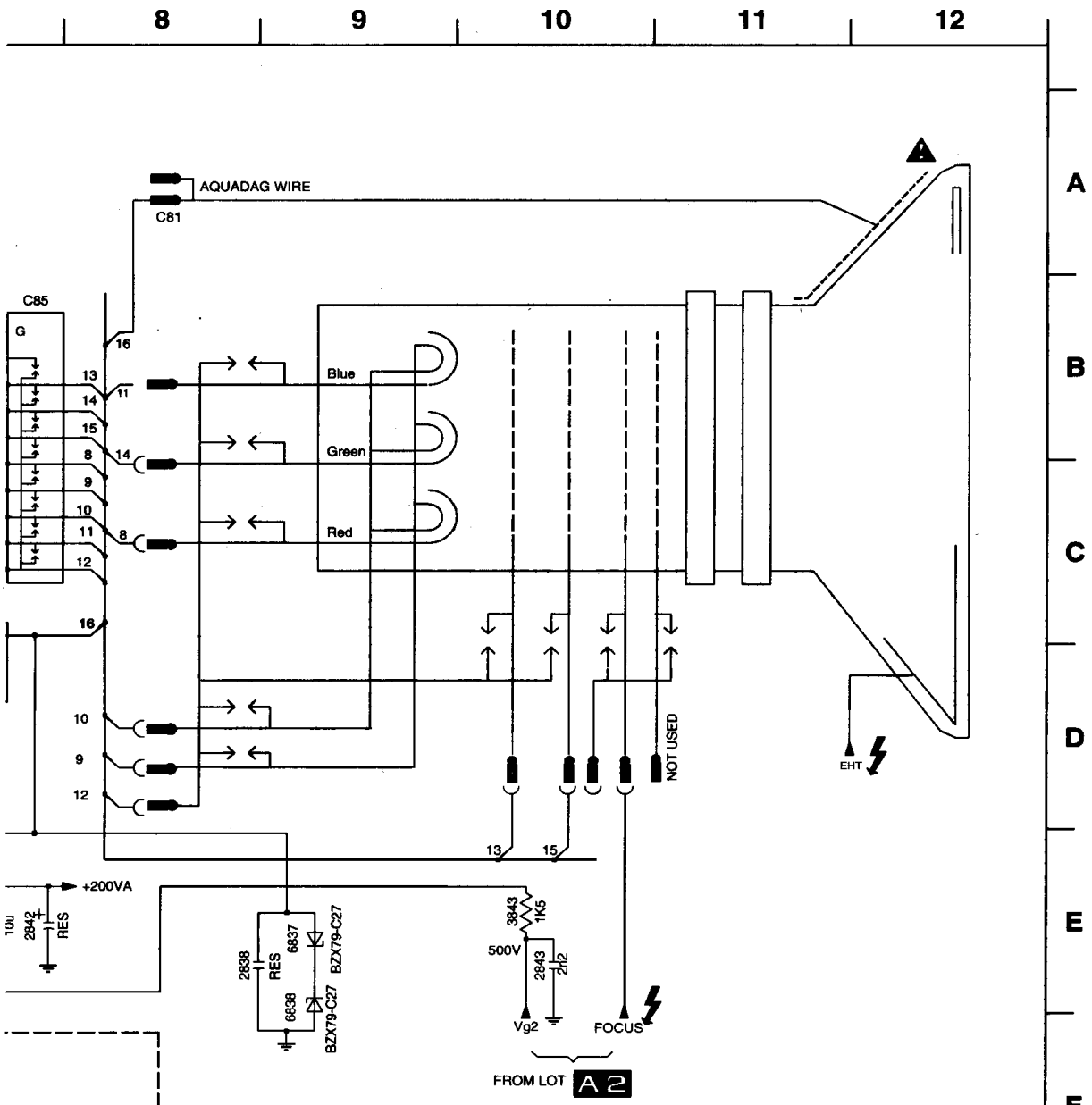


M24 B5
2241 E4
2247 D6
2248 F6
2250 B8
2251 B8
2259 B10
2261 F9
2263 E10
2266 G5
2267 D5
3241 D4
3242 E4
3243 D4
3244 D3
3245 D3
3246 D6
3247 D6
3248 F5
3249 F5
3250 A7
3251 B9
3252 C9
3253 C9
3254 C6
3255 B6
3257 D9
3260 F9
3261 F9
3262 F10
3263 E10
3264 G10
3265 G5
3266 G5
3267 G4
3268 G4
3271 F4
3274 F3
4252 B7
4253 B5
4254 C5
4256 C7
4267 H5
4273 D7
6244 F6
7242 D4
7243 D4
7250-A C7
7250-B B7
7250-C D7
7251 B9
7255 D9
7261 F9
7264 G5
7265 G4
7270 F4

CL 86532030_030.AI
140598

2032	B4	2302	B5	2560	C2	3056	B3	3244	A7	3551	D3	4032	A5	4267	B7	4521	B2	7243	A7
2040	B4	2318	B5	2561	C2	3057	B3	3245	A7	3552	D3	4039	B4	4273	B7	4522	B2	7251	B7
2050	B3	2320	B5	2562	C2	3058	B3	3247	A7	3559	D3	4041	B4	4274	B7	4523	B2	7255	B7
2052	B3	2321	A6	2565	D2	3060	B3	3248	A7	3560	D2	4043	B1	4275	A5	4524	B2	7261	B7
2054	B4	2351	A4	2566	D2	3061	B3	3249	A7	3563	D2	4044	B1	4276	A5	4525	B2	7264	B7
2055	B3	2352	A4	2567	D3	3062	B4	3251	B7	3564	D2	4050	B3	4277	A5	4526	B2	7265	B7
2060	A4	2430	C3	2568	D1	3063	B3	3252	B7	3565	D2	4051	B4	4278	A5	4527	B2	7270	B7
2061	A4	2431	C2	2569	D2	3065	A4	3253	B7	3566	D2	4052	B4	4279	A5	4528	B2	7282	A5
2062	A4	2432	D2	2570	D2	3066	A4	3255	A7	3567	D1	4053	B4	4280	A5	4529	B2	7283	A5
2063	A4	2433	D2	2602	E7	3067	A4	3257	B7	3568	D1	4054	B3	4304	A6	4530	C3	7316	B5
2070	B4	2434	D2	2646	C6	3068	A4	3260	B7	3569	C4	4055	B3	4323	B5	4531	B2	7318	B5
2071	B4	2437	C2	2647	C7	3070	A3	3261	B7	3570	C3	4056	B3	4350	A4	4532	B2	7320	B5
2072	B4	2438	C2	2670	C7	3071	A3	3262	B7	3573	D1	4067	A4	4430	C2	4533	B2	7325	B5
2073	B4	2441	D2	2673	B7	3072	A3	3263	B7	3574	D1	4070	A4	4431	C2	4534	B2	7350	A4
2074	B4	2444	C2	2705	B7	3073	A3	3264	B7	3575	C1	4072	B4	4432	C2	4535	B3	7352	A4
2075	A5	2446	C2	2709	B7	3074	B4	3265	B7	3576	D1	4073	B3	4433	C2	4536	C3	7353	A4
2077	B4	2447	C2	2710	B7	3076	B4	3266	B7	3616	D7	4077	C4	4434	C2	4537	C3	7356	A4
2080	B4	2448	C2	2746	C6	3079	B4	3267	B7	3618	E7	4079	B4	4435	C2	4538	C3	7361	A4
2082	A4	2450	C2	2760	D2	3085	A4	3268	B7	3627	D7	4080	B4	4436	D2	4539	B2	7363	A4
2084	B4	2451	C2	2761	D2	3086	A4	3271	B7	3670	C7	4081	A4	4437	D2	4540	B2	7374	A4
2085	A4	2452	C3	2763	D2	3087	A4	3280	A5	3671	B7	4083	A3	4438	C2	4647	C7	7551	D2
2086	A4	2453	C3	2765	D2	3090	B4	3281	A5	3672	B7	4084	B4	4439	B2	4747	B6	7552	D3
2088	B4	2454	D2	2766	D2	3091	B4	3282	A5	3673	B7	4085	B4	4440	C3	4815	A6	7715	C7
2090	A4	2455	C2	2768	D2	3092	B4	3283	A5	3709	B7	4086	A4	4441	B2	4901	C4	7716	C6
2091	A5	2456	C3	2769	E2	3096	B4	3293	A6	3710	B7	4088	A4	4442	B2	4902	C4	7760	D2
2094	B4	2457	C3	2770	E2	3097	B4	3303	A6	3717	C6	4099	B4	4443	C2	4903	C5	7800	A6
2124	A7	2459	C2	2771	E2	3098	B4	3304	A6	3731	C6	4117	A5	4444	C2	4904	D5	7909	C5
2127	A7	2460	C2	2772	E2	3099	B4	3305	A6	3732	C7	4124	B6	4445	B2	4906	D5	7910	C5
2144	A7	2461	C2	2810	A7	3110	A4	3309	B5	3740	C7	4125	A7	4446	C2	4910	D4	7960	D5
2145	A7	2462	C2	2811	A6	3111	A4	3310	B5	3744	C6	4126	A7	4447	C3	4911	D3	7961	C5
2146	A7	2463	C2	2812	A6	3116	A4	3311	B5	3746	C6	4127	A7	4448	B2	4920	D6	7962	C5
2147	A7	2464	B3	2813	A6	3117	A5	3312	B5	3747	C6	4128	A7	4449	B2	4930	C5	7963	C4
2148	A7	2465	C2	2814	A6	3126	A7	3315	B5	3748	C6	4129	A7	4450	C3	4931	C5		
2149	A7	2467	C2	2815	A6	3128	A7	3316	B5	3760	D2	4130	A7	4451	C2	4940	C5		
2153	A7	2469	C2	2816	A6	3129	A7	3317	B5	3761	D2	4131	A7	4452	D2	4942	C5		
2155	A7	2470	C2	2817	A6	3130	A7	3318	B5	3762	D2	4132	A7	4453	D2	4945	C5		
2157	A6	2471	C2	2818	A6	3131	A7	3320	B5	3763	D2	4133	A7	4454	D2	6040	B1		
2161	B7	2472	C2	2820	A6	3141	A7	3321	B5	3765	D2	4134	A7	4455	C2	6070	A3		
2171	A6	2473	B3	2821	A6	3142	A6	3322	B5	3766	D2	4135	A7	4456	C1	6071	A3		
2176	B6	2474	B3	2936	C5	3143	A6	3324	B5	3767	D1	4136	A7	4457	C1	6072	A3		
2177	B6	2475	C2	2939	D4	3145	A7	3325	B5	3769	E1	4137	A7	4458	C3	6073	A3		
2180	B6	2476	C2	2940	C5	3146	A7	3326	B5	3770	D2	4142	A7	4459	C2	6110	A4		
2181	B6	2479	C2	2945	C5	3150	A7	3327	B6	3771	E2	4143	A7	4460	C2	6130	A7		
2186	A6	2480	C2	2946	C5	3153	A7	3330	B5	3800	A6	4145	A6	4461	B2	6131	A7		
2188	A6	2481	B3	2947	D5	3157	B7	3331	B5	3801	A7	4149	A7	4462	B2	6244	A7		
2189	A6	2482	B3	2950	D5	3158	A7	3350	A4	3803	C6	4156	A6	4463	B1	6300	B5		
2190	A6	2483	C2	3010	B4	3159	B7	3351	A4	3804	A6	4162	B7	4464	B1	6301	B5		
2191	A6	2484	C2	3011	B4	3160	A7	3352	A4	3805	A6	4163	B6	4465	C2	6302	B5		
2192	A6	2485	C2	3012	B4	3161	B7	3353	A4	3806	A7	4170	A6	4466	D2	6315	B5		
2196	A6	2490	C2	3013	B4	3163	B6	3354	A4	3807	A6	4171	A6	4467	D2	6316	B5		
2197	A6	2491	C2	3014	B4	3164	B6	3355	A4	3808	A6	4172	B6	4468	D1	6317	B5		
2239	D1	2495	C2	3015	B4	3165	B7	3356	A4	3809	A7	4181	B6	4469	D1	6325	B5		
2240	D1	2497	C1	3017	E1	3166	B7	3357	A4	3810	A7	4190	A6	4470	D1	6328	B5		
2241	A7	2498	C1	3018	E1	3167	B7	3358	A4	3811	A6	4192	A6	4471	D1	6430	C2		
2247	A7	2499	C1	3025	B4	3168	B7	3360	A3	3813	A7	4195	A6	4500	D2	6550	D2		
2248	A7	2500	C2	3027	B4	3169	B7	3361	A4	3814	A6	4198	A6	4501	C1	7041	B4		
2251	B7	2501	C1	3029	B4	3170	B6	3364	A3	3910	D3	4201	B6	4502	D2	7070	A4		
2259	B7	2502	C1	3030	B4	3171	B6	3430	C2	3911	D3	4225	A6	4503	C2	7071	A4		
2261	B7	2503	C1	3031	B4	3172	B6	3431	C2	3926	E6	4226	A5	4504	C2	7072	A4		
2263	B7	2504	C1	3032	B4	3173	B6	3432	D2	3932	C6	4227	A6	4505	C2	7073	A4		
2266	B7	2505	C2	3033	B4	3174	B7	3433	D2	3933	C6	4230	D1	4506	C2	7075	B3		
2267	B7	2506	C2	3034	B4	3175	B6	3434	C2	3939	D4	4244	B7	4507	C2	7081	B5		
2275	A5	2507	C2	3035	B4	3176	B6	3435	C2	3943	C5	4250	B7	4508	C2	7085	A4		
2276	A5	2508	C2	3036	B4	3189	A6	3436	C2	3944	D5	4251	B7	4509	C2	7159	B7		
2277	A5	2509	C2	3037	B4	3190	A6	3450	B3	3945	C5	4252	B7	4510	C2	7161	B6		
2278	A5	2511	B2	3038	B4	3191	A6	3451	B2	3955	C5	4253	B7	4511	D2	7166	B7		
2279	A5	2521	B1	3039	B4	3192	A6	3452	B2	3963	C5	4254	B7	4512	D2	7167	B7		
2280	A5	2522	B1	3040	B4	3193	A6	3453	D1	3965	C4	4255	B7	4513	D2	7170	B7		
2281	A5	2550	D3	3043	B1	3194	A5	3454	C1	3976	E6	4256	B7	4514	D2	7176	B6		
2291	A5	2551	D3	3044	B1	3197	A6	3455	C2	4001	C1	4257	B7	4515	C3	7189	A6		
2292	A5	2552	C4	3045	B1	3239	D1	3456	C2	4003	C1	4258	A7	4516	C2	7190	A6		
2293	A5	2555	C4	3046	B1	3240	D1	3457	C1	4004	D2	4260	B7	4517	C1	7191	A6		
2294	A5	2556	C4	3048	B1	3241	B7	3458	D3	4023	B3	4261	B7	4518	C1	7192	A6		
2300	B5	2558	D2	3049	B1	3242	B7	3460	D2	4025	B4	4262	B7	4519	C1	7193	A6		
2301	B5	2559	D2	3055	B4	3243	A7	3550	D3	4031	A5	4263	B7	4520	B2	7242	B7		


B CRT PANEL
TO M30 OF RGB PROCESSING A7
C30
V13a
V13b
V13c
BCI
+200VA
2831 RES
2830 100n
V14a
V14b
V14c
6831 BAV21
6833 BAV21
6835 BAV21
C84
3831 100R
3832 1K
3833 100R
3834 1K
3835 100R
3836 1K
7830 TDA6103Q/N3
RGB AMP
VDD
G VOC1 155V VI1 1V9
R VOC2 152V VI2 1V9
B VOC3 150V VI3 1V9
3X
FLASH DIODE
1X
V BIAS
MIRROR 2
MIRROR 3
MIRROR 1
CURRENT SOURCES
LEVEL-SHIFTER 1
DIFFERENTIAL STAGE
LEVEL-SHIFTER 2
THERMAL PROTECTION
VIP
GND
BCI
2836
C60
+13V 13V7
+200V 183V
EHT_INFO 12V1
FF
GND_LOT
TO M60 OF HOR. DEFL + LINE O/P A2
L12
3842
5842
3841
2841 22n
3840 100R
9840 5840 RES
182V
3845 330K
2840
SCAVEM
#5863 5u6
##5862 5u6
##3860 10R
+200V
3874 8k2
2871 22u
SCAVEM DRIVER
7862 BD830
72V6
72V
36V
37V
7863 BD829
0V6
0V
SCAVEM PRE-DRIVER
1N4148
56p
150R
820R FOR 34"
3861 3K3 2863 15p
3862 2K7 2862 18p
3863 2K2 2861 22p
2860 100u
10u FOR 34"
##9876 #2876 10u
2865 4p7
3875 4K7
3865 18K
3877 100R
5V6
13V5
7861 BF370
4V7
3881 10R
1V4
7860 BF199
0V7
RGB ADDER
2864 470n
3864 470R
2866 470n
3866 2K2
3867 220R
3882 220R
BAS216
3876 33R
2867 270p
2868 100p
2869 100n
2870 22n
2872 47p
3880 10R
= 28"/29"/37"
= 34"

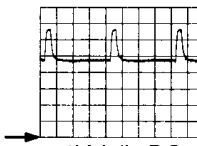


*	21"	25" BLS	25", 28" BLD	27V	32V	35V	29" SF	24" WIDE	28" WIDE
5842	27u	47u	33u	56u	56u	18u	56u	47u	47u
3841	4R7	1R5	3R3	2R7	4R7	1R	1R	1R	1R
3842	4R7	1R5	3R3	2R7	4R7	1R	1R	1R	1R

CL 86532030_010.AI
120698

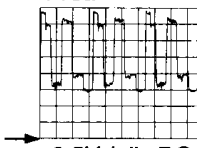
C30 A4
C60 D4
C80 F7
C84 B7
C85 B7
2830 A5
2831 A5
2836 D4
2838 E8
2840 E7
2841 D7
2842 E7
2843 E10
2860 F2
2861 H2
2862 G2
2863 G2
2864 G3
2865 G3
2866 H4
2867 G5
2868 G5
2869 G6
2870 G6
2871 F5
2872 G7
2873 F6
2874 F6
2876 G2
3831 B5
3832 B6
3833 B6
3834 B6
3835 C5
3836 C6
3840 E6
3841 D6
3842 D6
3843 E10
3845 E7
3860 F2
3861 F2
3862 G2
3863 H2
3864 H3
3865 F4
3866 H4
3867 H4
3868 G6
3869 G6
3870 F6
3871 G6
3872 G6
3873 H6
3874 F4
3875 F3
3876 G5
3877 G3
3880 G7
3881 G3
3882 H4
5840 E7
5842 D6
5860 H7
5861 F7
5862 F2
5863 F2
6831 B6
6833 B6
6835 A6
6837 E9
6838 E9
6861 G4
6862 G4
6867 F5
6868 G5
7830 B2
7860 G3
7861 G4
7862 F6
7863 G6
9840 E7
9876 G2

L12



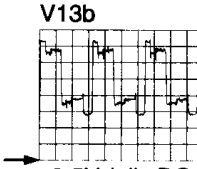
1V / div DC
5ms / div

V13a



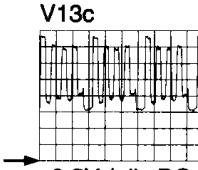
0.5V / div DC
20µs / div

V13b



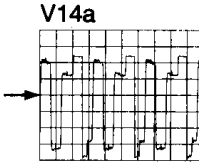
0.5V / div DC
20µs / div

V13c



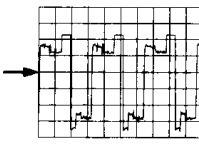
0.5V / div DC
20µs / div

V14a



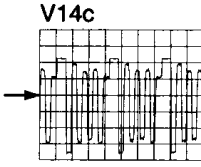
20V / div AC
20µs / div

V14b



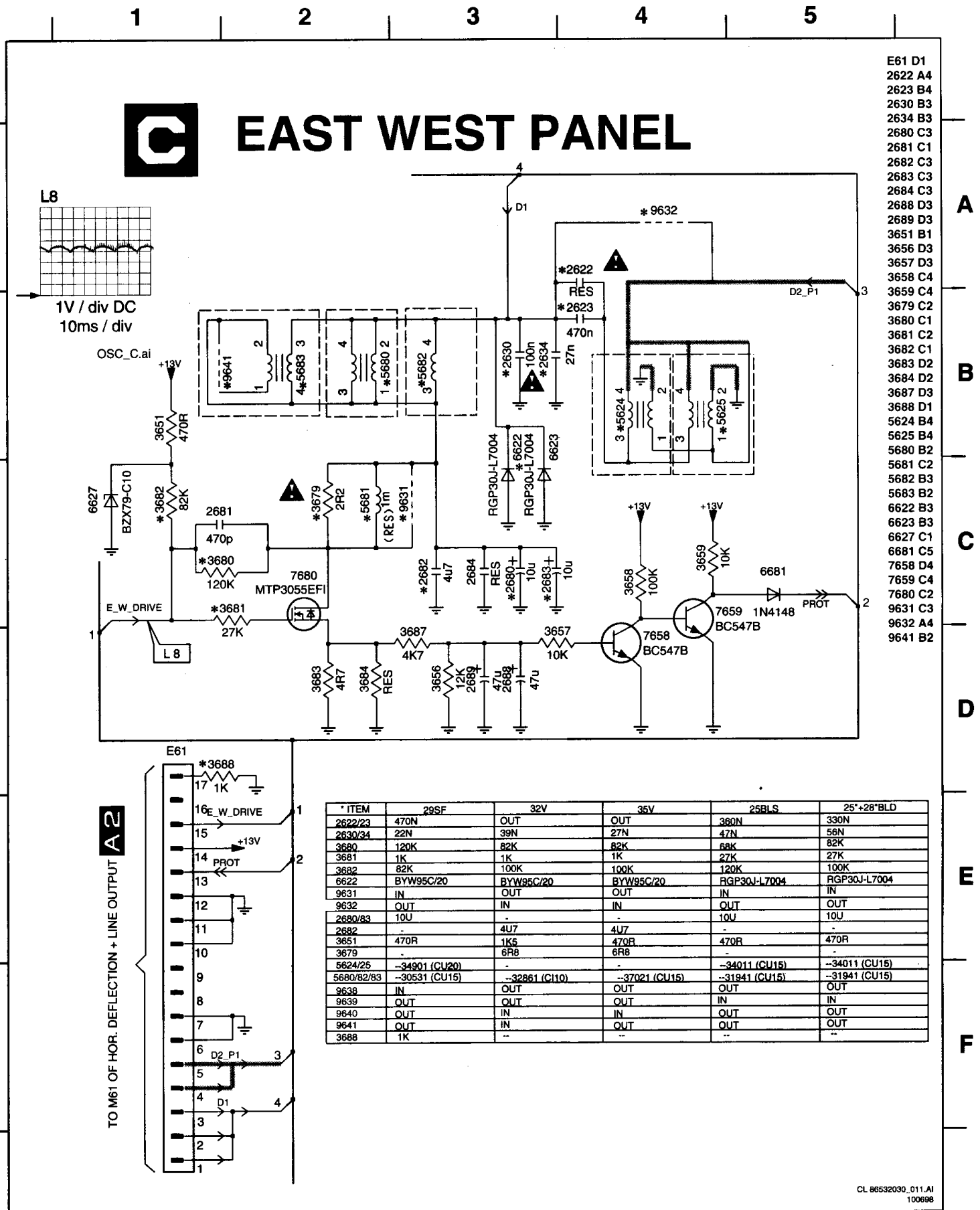
20V / div AC
20µs / div

V14c

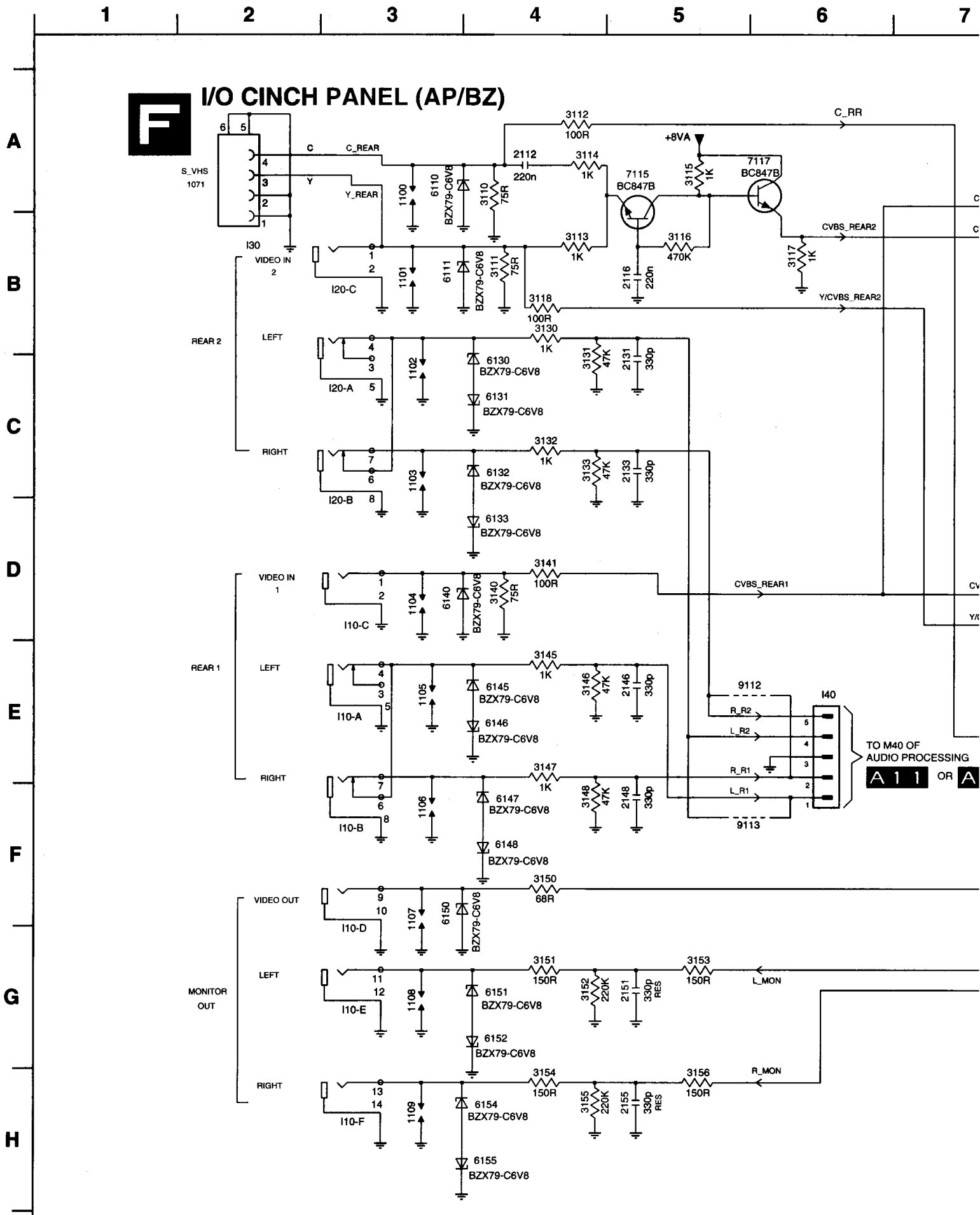


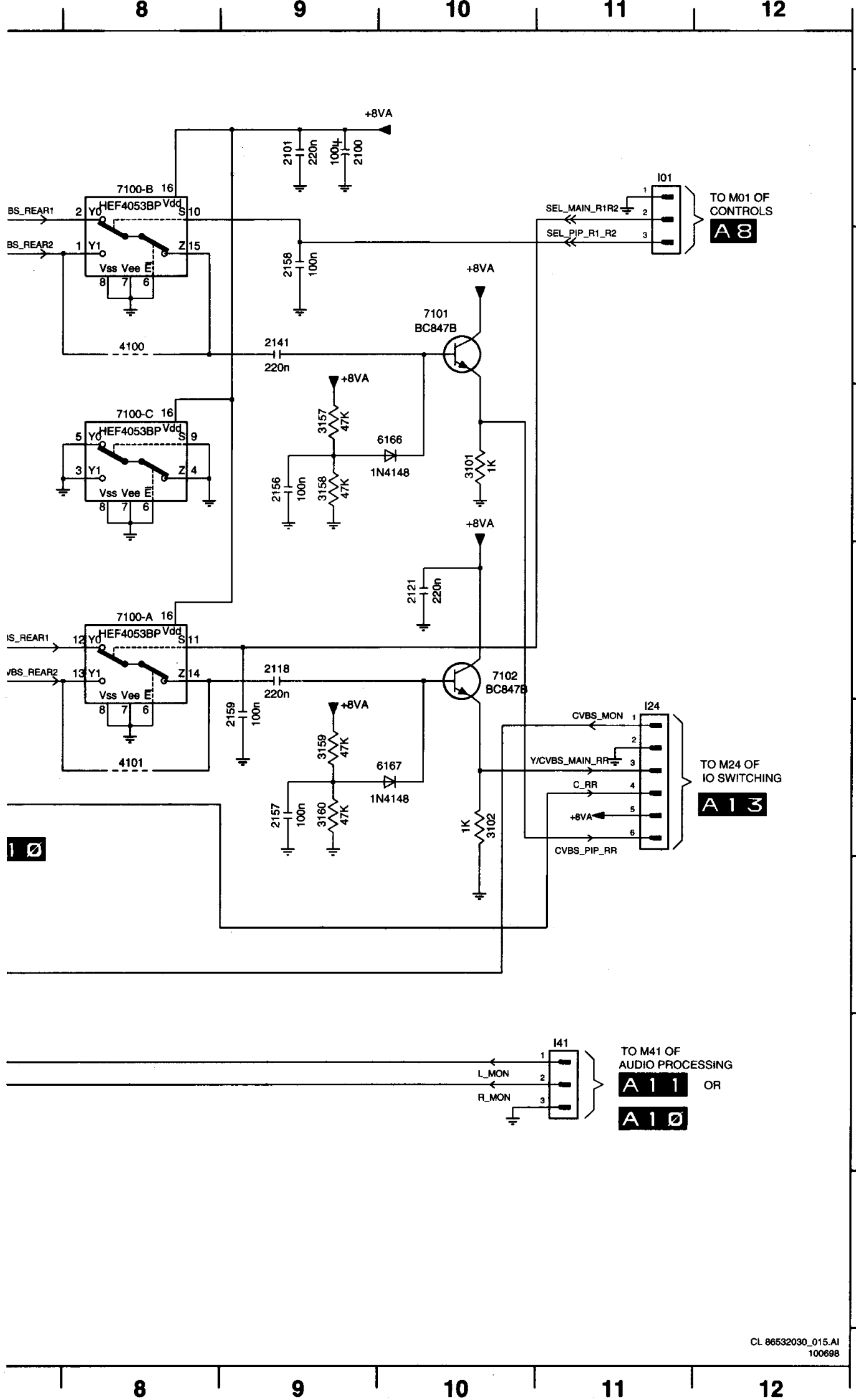
20V / div AC
20µs / div

OSC_B.ai



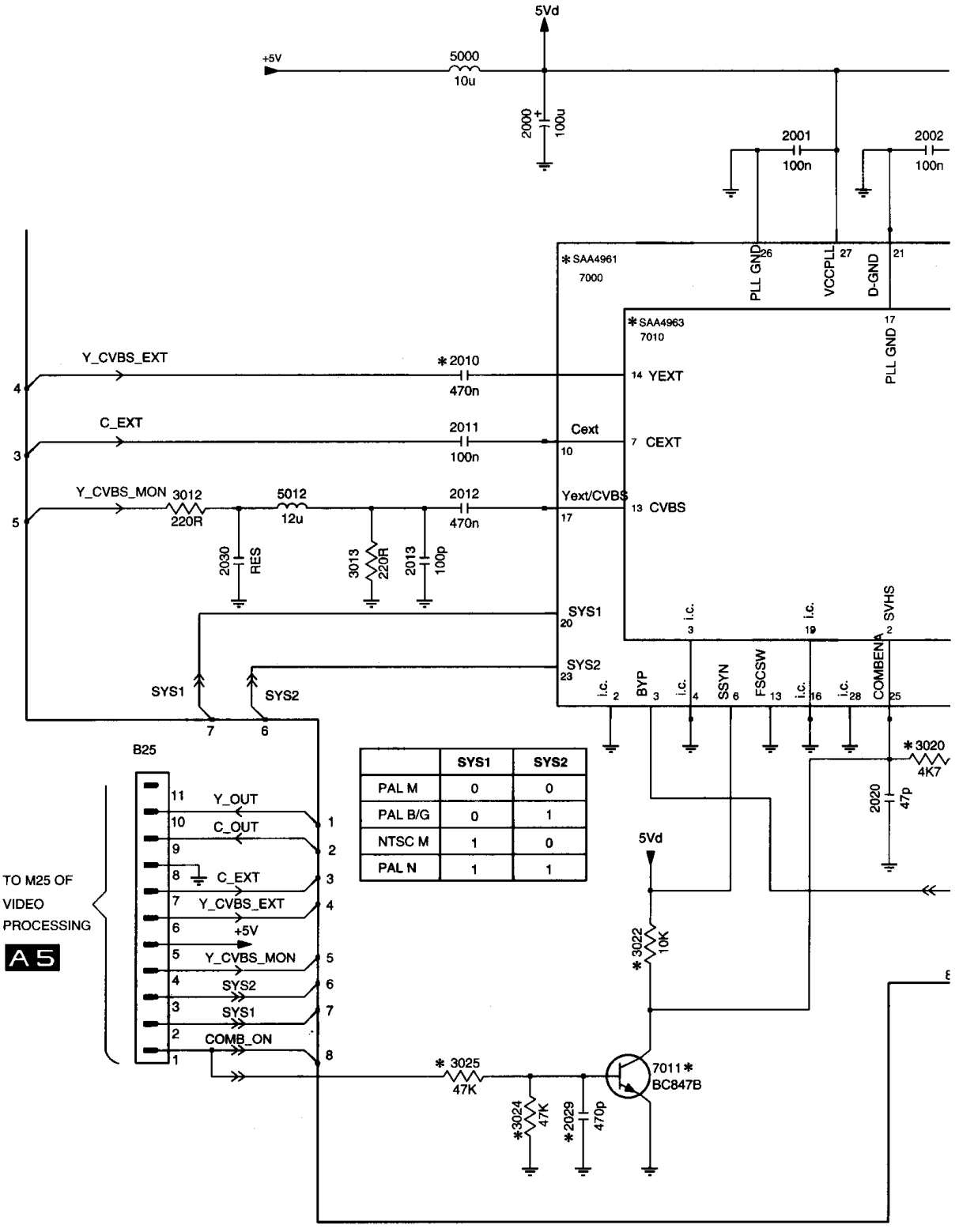
* ITEM	29SF	32V	35V	25BLS	25"+28"BLD
2622/23	470N	OUT	OUT	360N	330N
2630/34	22N	39N	27N	47N	56N
3680	120K	82K	82K	68K	82K
3681	1K	1K	1K	27K	27K
3682	82K	100K	100K	120K	100K
6622	BYW95C/20	BYW95C/20	BYW95C/20	RGP30J-L7004	RGP30J-L7004
9631	IN	OUT	OUT	IN	IN
9632	OUT	IN	IN	OUT	OUT
2680/83	10U	-	-	10U	10U
2682	-	4U7	4U7	-	-
3651	470R	1K5	470R	470R	470R
3679	-	6R8	6R8	-	-
5624/25	--34901 (CU20)	-	-	--34011 (CU15)	--34011 (CU15)
5680/82/83	--30531 (CU15)	--32861 (C10)	--37021 (CU15)	--31941 (CU15)	--31941 (CU15)
9638	IN	OUT	OUT	OUT	OUT
9639	OUT	OUT	OUT	IN	IN
9640	OUT	IN	IN	OUT	OUT
9641	OUT	IN	OUT	OUT	OUT
3688	1K	--	--	--	--


F
I/O CINCH PANEL (AP/BZ)
S_VHS
1071
I30
C
C_REAR
Y
Y_REAR
VIDEO IN 2
I20-C
REAR 2
LEFT
I20-A
RIGHT
I20-B
VIDEO IN 1
I10-C
REAR 1
LEFT
I10-A
RIGHT
I10-B
VIDEO OUT
I10-D
MONITOR OUT
LEFT
I10-E
RIGHT
I10-F
3112 100R
C_RR
+8VA
2112 220n
3114 1K
7115 BC847B
7117 BC847B
3115 1K
3113 1K
3116 470K
3117 1K
CVBS_REAR2
2116 220n
3118 100R
Y/CVBS_REAR2
3130 1K
6130 BZX79-C6V8
6131 BZX79-C6V8
3131 47K
2131 330p
3132 1K
6132 BZX79-C6V8
6133 BZX79-C6V8
3133 47K
2133 330p
3141 100R
CVBS_REAR1
3145 1K
6145 BZX79-C6V8
6146 BZX79-C6V8
3146 47K
2146 330p
3147 1K
6147 BZX79-C6V8
6148 BZX79-C6V8
3148 47K
2148 330p
3150 68R
3151 150R
6151 BZX79-C6V8
6152 BZX79-C6V8
3152 220K
2151 330p RES
3153 150R
L_MON
3154 150R
6154 BZX79-C6V8
6155 BZX79-C6V8
3155 220K
2155 330p RES
3156 150R
R_MON
9112
9113
I40
R_R2
L_R2
R_R1
L_R1
TO M40 OF AUDIO PROCESSING
A11 OR A



I01 A11
I24 E11
I30 B2
I40 E6
I41 G11
1100 A3
1101 B3
1102 C3
1103 C3
1104 D3
1105 E3
1106 F3
1107 F3
1108 G3
1109 H3
2100 A9
2101 A9
2112 A4
2116 B5
2118 D9
2121 D10
2131 C5
2133 C5
2141 B9
2146 E5
2148 F5
2151 G5
2155 H5
2156 C9
2157 E9
2158 B9
2159 E9
3101 C10
3102 E10
3110 A4
3111 B4
3112 A4
3113 B4
3114 A4
3115 A5
3116 B5
3117 B6
3118 B4
3130 B4
3131 C4
3132 C4
3133 C4
3140 D4
3141 D4
3145 E4
3146 E4
3147 E4
3148 F4
3150 F4
3151 G4
3152 G4
3153 G5
3154 H4
3155 H4
3156 H5
3157 C9
3158 C9
3159 E9
3160 E9
4100 B8
4101 E8
6110 A3
6111 B3
6130 C4
6131 C4
6132 C4
6133 D4
6140 D3
6145 E4
6146 E4
6147 F4
6148 F4
6150 F3
6151 G4
6152 G4
6154 H4
6155 H4
6166 C10
6167 E10
7100-A D8
7100-B A8
7100-C C8
7101 B10
7102 D10
7115 A5
7117 A5
9112 E5
9113 F5
I10-A E3
I10-B F3
I10-C D3
I10-D F3
I10-E G3
I10-F H3
I20-A C3
I20-B C3

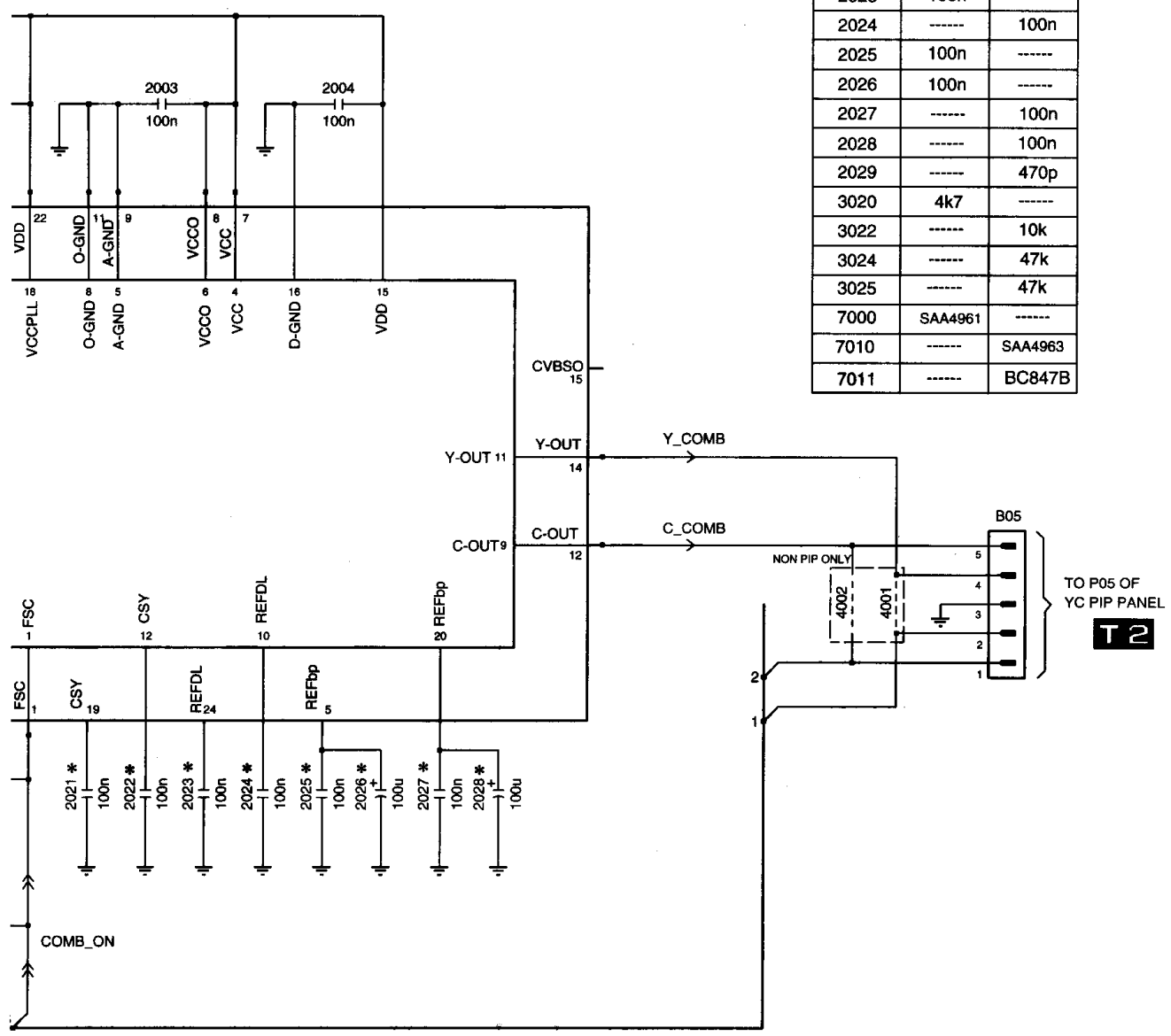
COMB FILTER PANEL



	SYS1	SYS2
PAL M	0	0
PAL B/G	0	1
NTSC M	1	0
PAL N	1	1

B05 D11
B25 E2
2000 B4
2001 B6
2002 B6
2003 B7
2004 B8
2010 C4
2011 D4
2012 D4
2013 D4
2020 F6
2021 F7
2022 F7
2023 F7
2024 F8
2025 F8
2026 F8
2027 F9
2028 F9
2029 G5
2030 D3
3012 D2
3013 D3
3020 E6
3022 F5
3024 G4
3025 G4
4001 E11
4002 E11
5000 B4
5012 D3
7000 C5
7010 C5
7011 G5

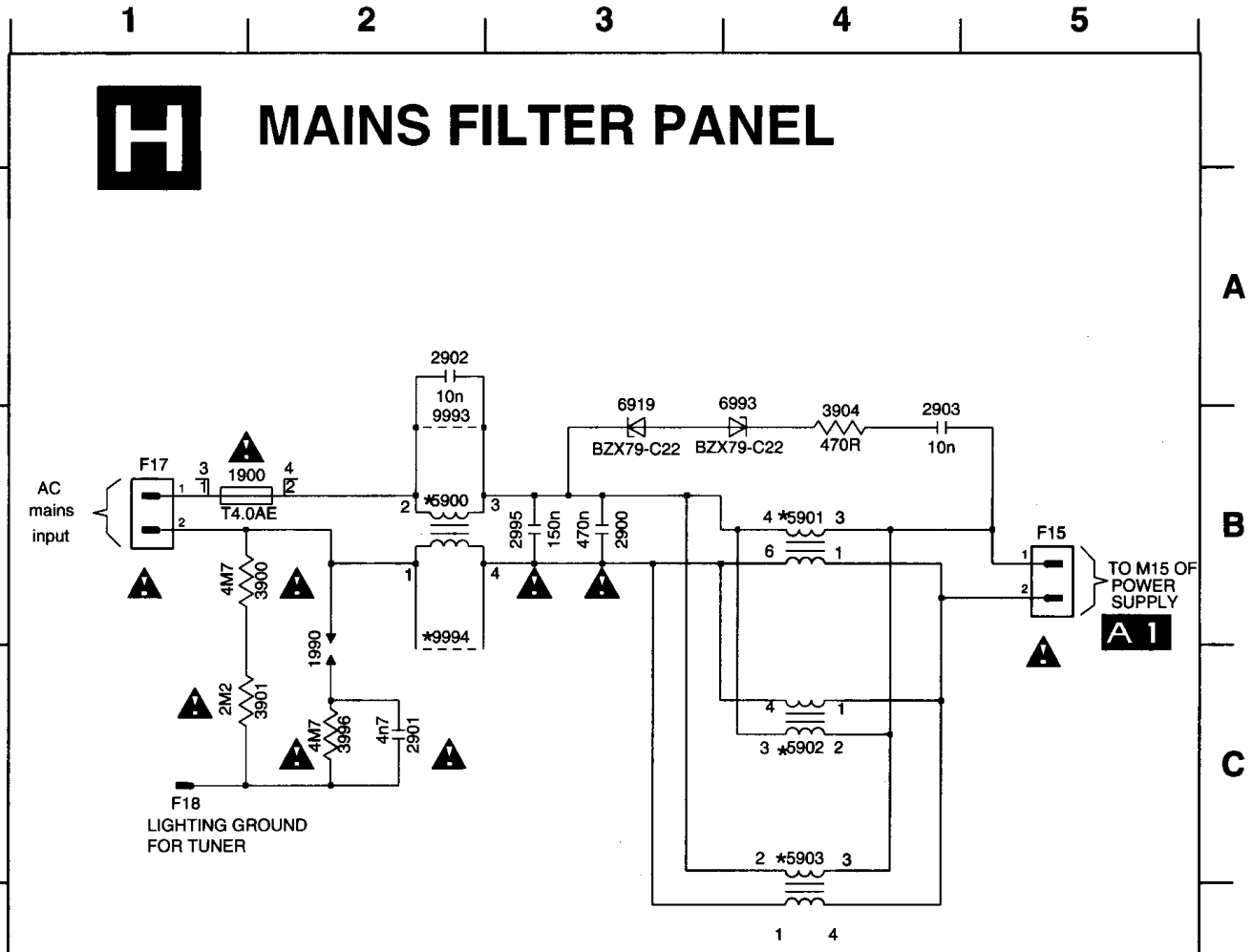
*	PAL MULTI	NTSC
2010	------	470n
2021	100n	------
2022	------	100n
2023	100n	------
2024	------	100n
2025	100n	------
2026	100n	------
2027	------	100n
2028	------	100n
2029	------	470p
3020	4k7	------
3022	------	10k
3024	------	47k
3025	------	47k
7000	SAA4961	------
7010	------	SAA4963
7011	------	BC847B



CL 86532030_016.AI
120698

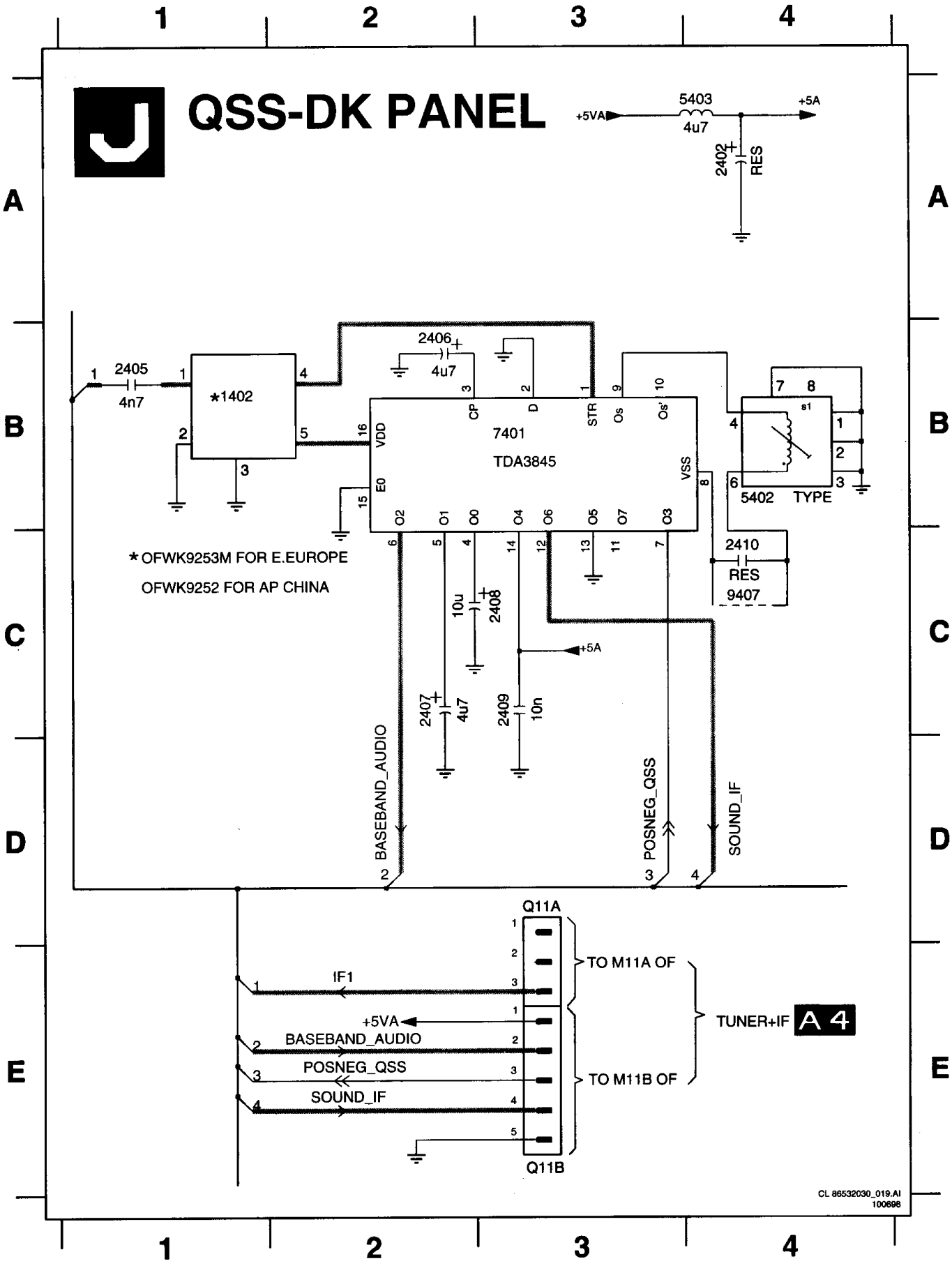
PCB Coml

F15 B5 1900 B1 2900 B3 2902 A2 2995 B3 3901 C2 3996 C2 5901 B4 5903 C4 6993 A4 9994 B2
F17 B1 1990 C2 2901 C2 2903 B4 3900 B2 3904 B4 5900 B2 5902 C4 6919 B3 9993 B2



* ITEM NO.	TAIWAN/KOREA CISPR (F.R.)	EUROPE CISPR (S.R.)	U.S./BRAZIL NON-CISPR (L.S.)	AP/LATAM NON-CISPR
5900	DMF-2405	DMF-2405	----------	----------
5901	DMF-3515	----------	----------	----------
5902	----------	DMF-2830	DMF-2805	----------
5903	----------	----------	----------	DMF-2405
9993	----------	----------	JUMPER	JUMPER
9994	----------	----------	JUMPER	JUMPER

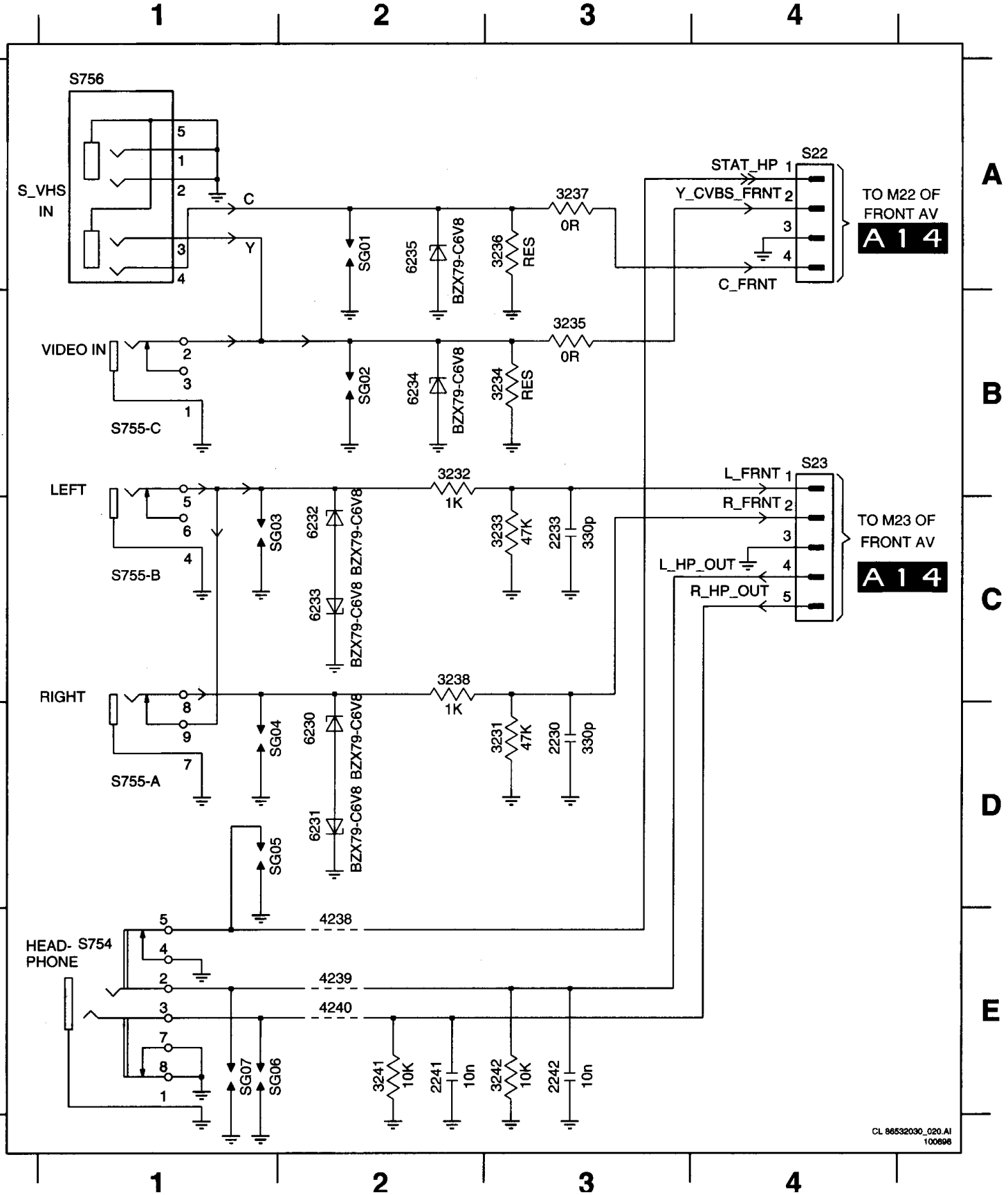
CL 86532030_017.AI
100698

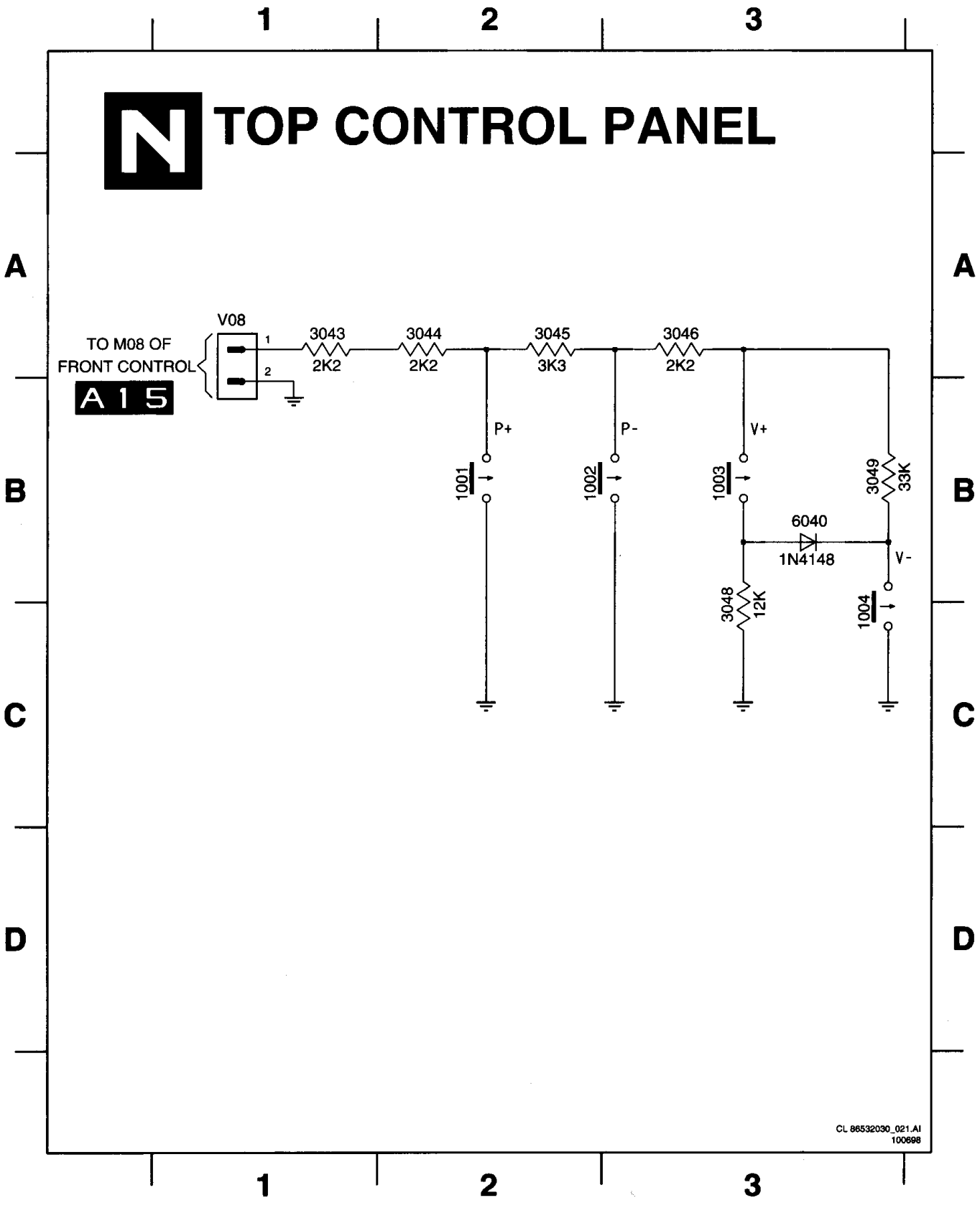


1402 B1
2402 A4
2405 B1
2406 B2
2407 D2
2408 C3
2409 C3
2410 C4
5402 B4
5403 A4
7401 B3
9407 C4
Q11A D3
Q11B E3

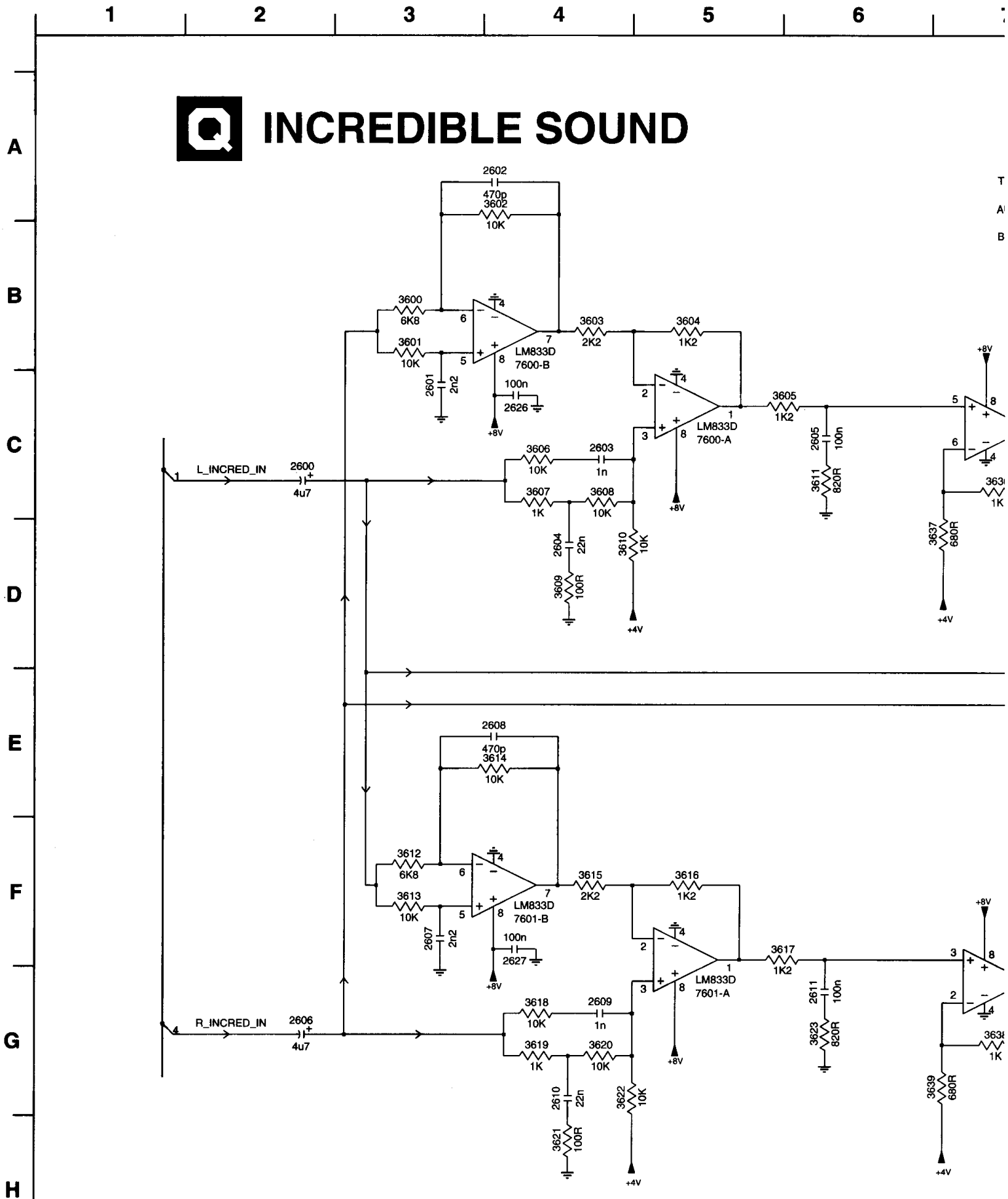
SIDE AV PANEL

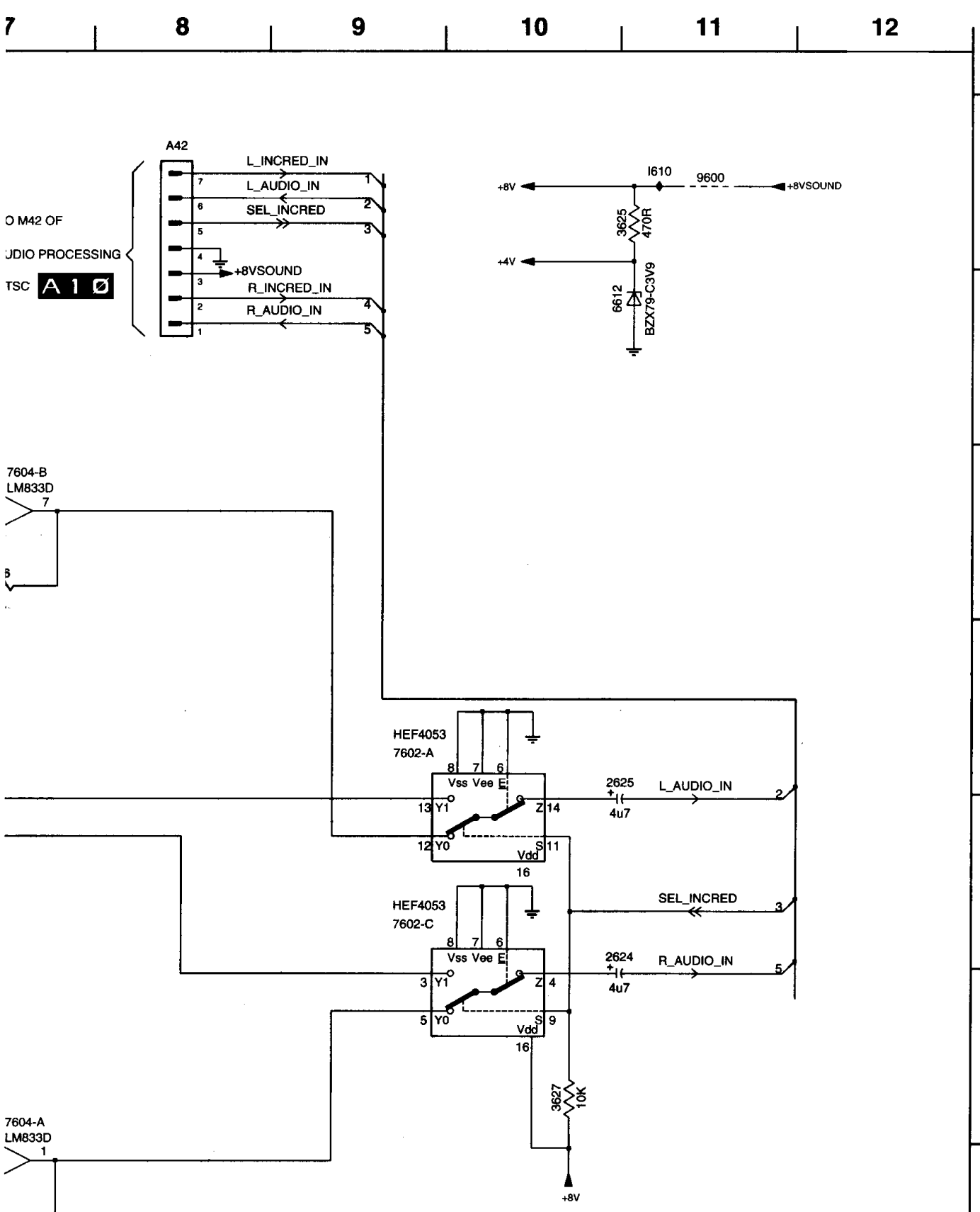
S22 A4	2241 E2	3233 C3	3237 A3	4238 E2	6231 D2	6235 A2	S755-C B1	SG03 C1	SG07 E1
S23 B4	2242 E3	3234 B3	3238 C2	4239 E2	6232 C2	S754 E1	S756 A1	SG04 D1	
2230 D3	3231 D3	3235 B3	3241 E2	4240 E2	6233 C2	S755-A D1	SG01 A2	SG05 D1	
2233 C3	3232 B2	3236 A3	3242 E3	6230 D2	6234 B2	S755-B C1	SG02 B2	SG06 E1	



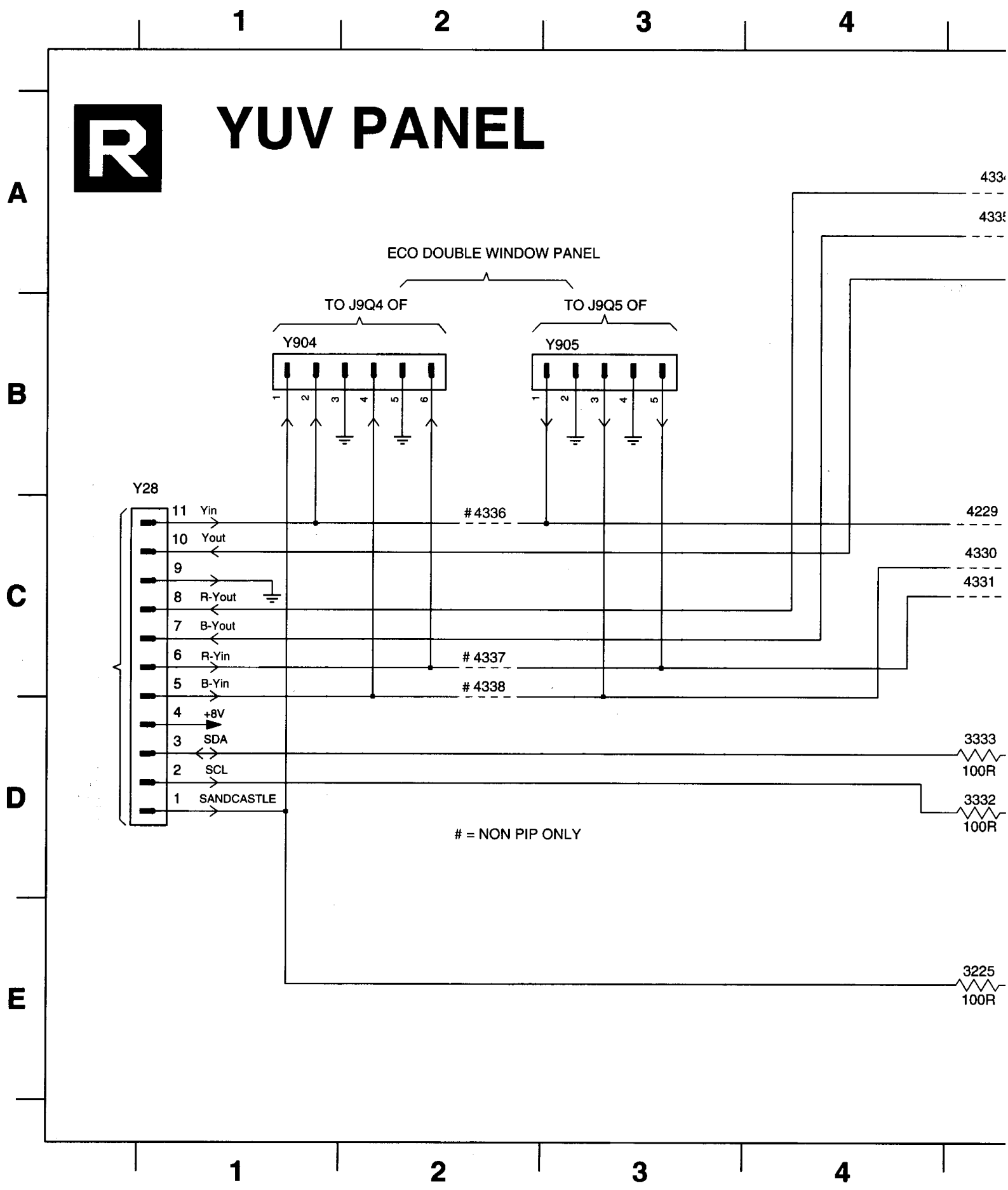


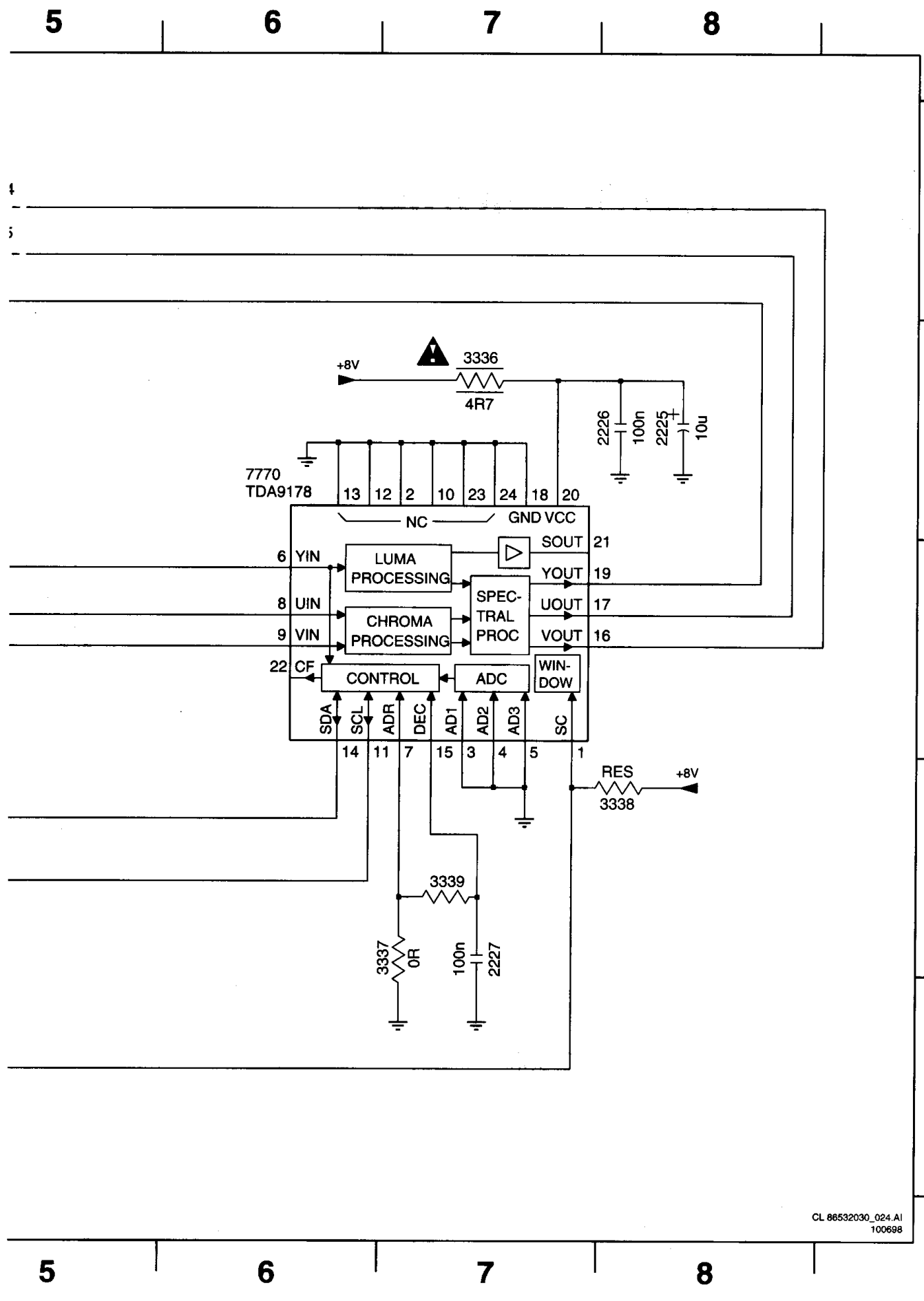
V08 A1
1001 B2
1002 B2
1003 B3
1004 C3
3043 A1
3044 A2
3045 A2
3046 A3
3048 C3
3049 B3
6040 B3


INCREDIBLE SOUND
L_INCRED_IN
R_INCRED_IN
LM833D
7600-B
7600-A
7601-B
7601-A
+8V
+4V

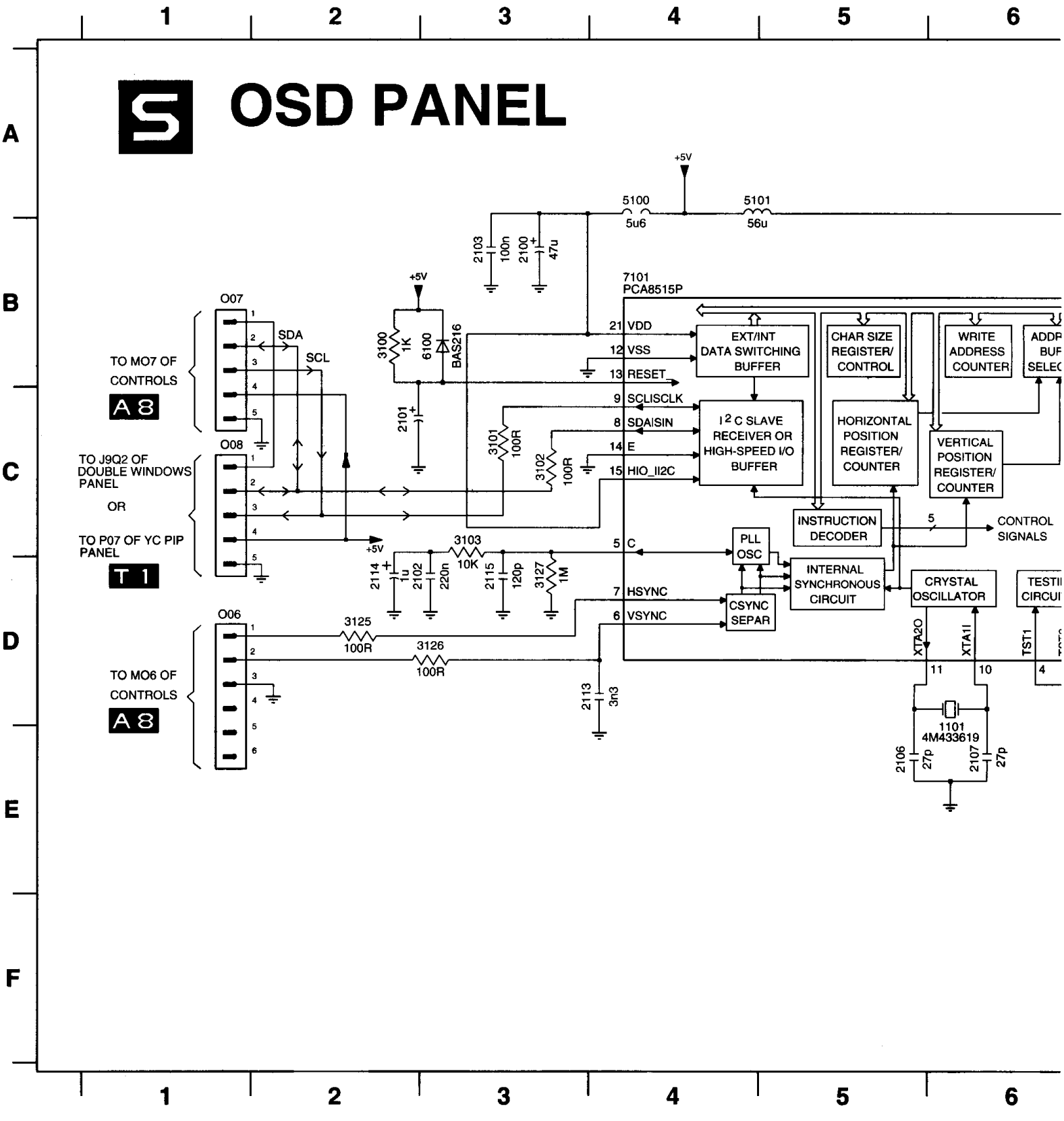


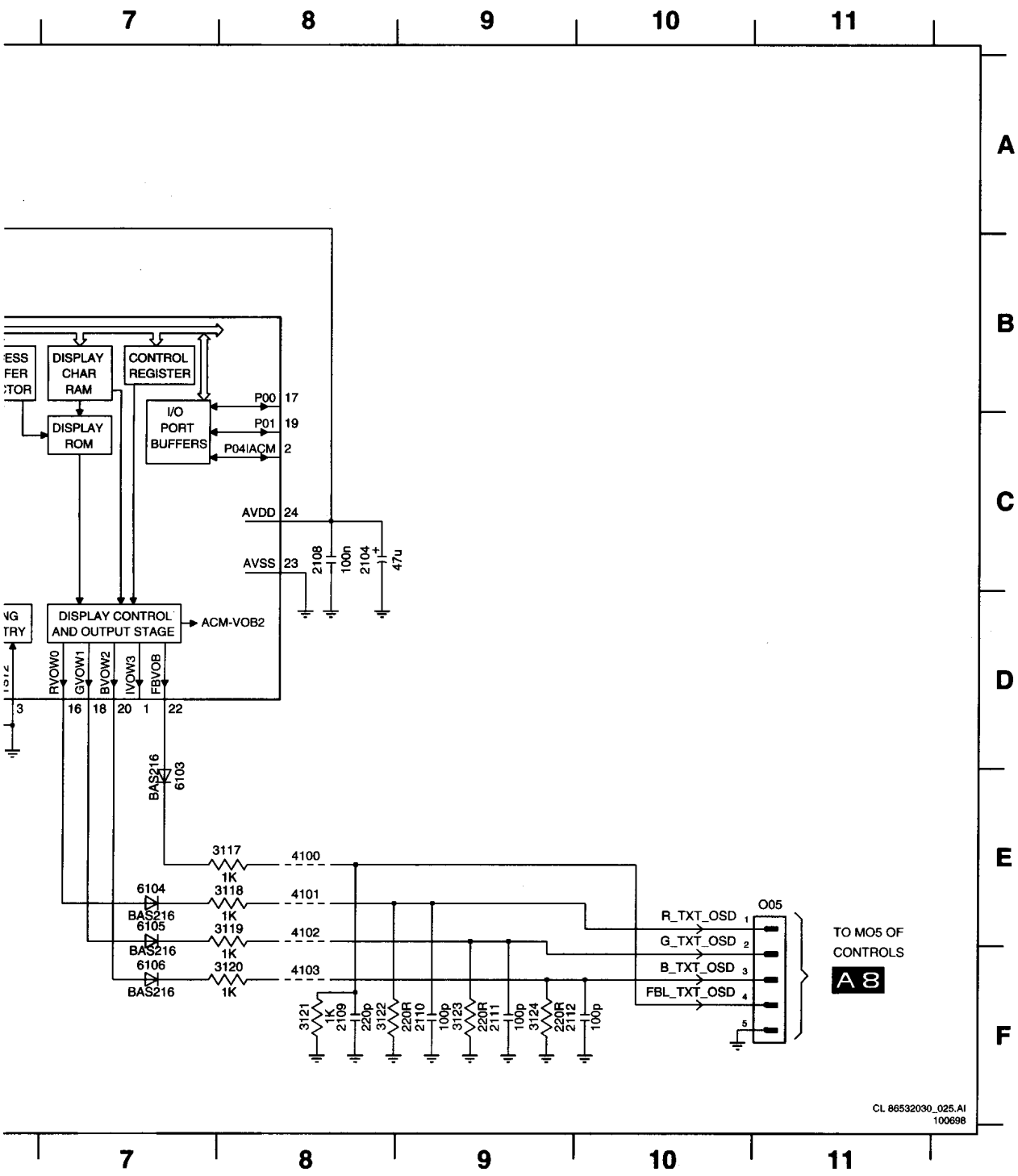
A05 C11
A07 B11
A42 A8
2600 C2
2601 C3
2602 A4
2603 C4
2604 D4
2605 C6
2606 G2
2607 F3
2608 E4
2609 G4
2610 G4
2611 G6
2624 E10
2625 D10
2626 C4
2627 F4
3600 B3
3601 B3
3602 A4
3603 B4
3604 B5
3605 C6
3606 C4
3607 C4
3608 C4
3609 D4
3610 D4
3611 C6
3612 F3
3613 F3
3614 E4
3615 F4
3616 F5
3617 F6
3618 G4
3619 G4
3620 G4
3621 H4
3622 G4
3623 G6
3625 A11
3627 F10
3636 C7
3637 D7
3638 G7
3639 G7
6612 B10
7600-A C5
7600-B B4
7601-A G5
7601-B F4
7602-A D9
7602-C E9
7604-A F7
7604-B C7
9600 A11


1
2
3
4
A
B
C
D
E
YUV PANEL
ECO DOUBLE WINDOW PANEL
TO J9Q4 OF
TO J9Q5 OF
Y904
Y905
Y28
11 Yin
10 Yout
9
8 R-Yout
7 B-Yout
6 R-Yin
5 B-Yin
4 +8V
3 SDA
2 SCL
1 SANDCASTLE
4336
4337
4338
4229
4330
4331
3333
100R
3332
100R
3225
100R
= NON PIP ONLY

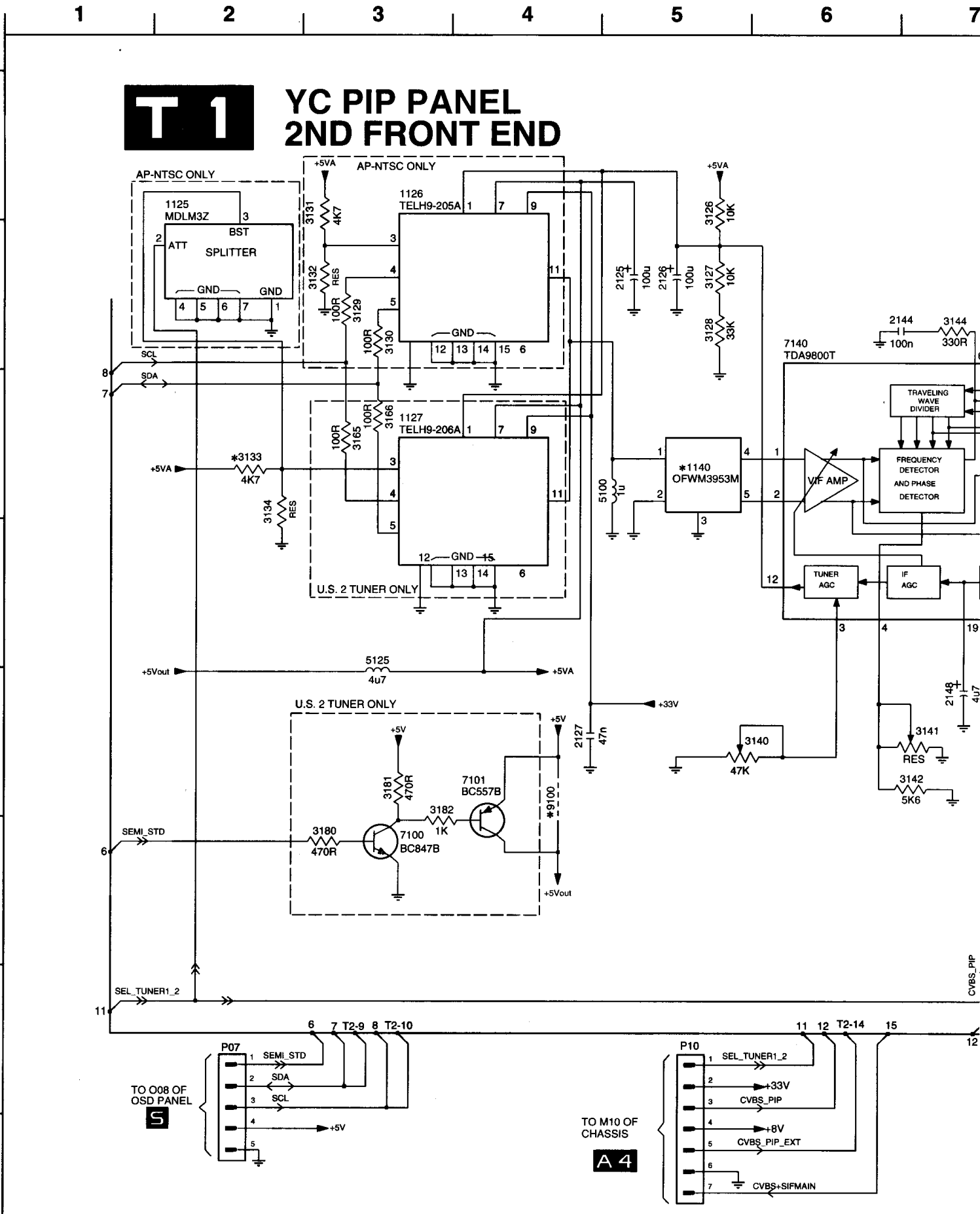


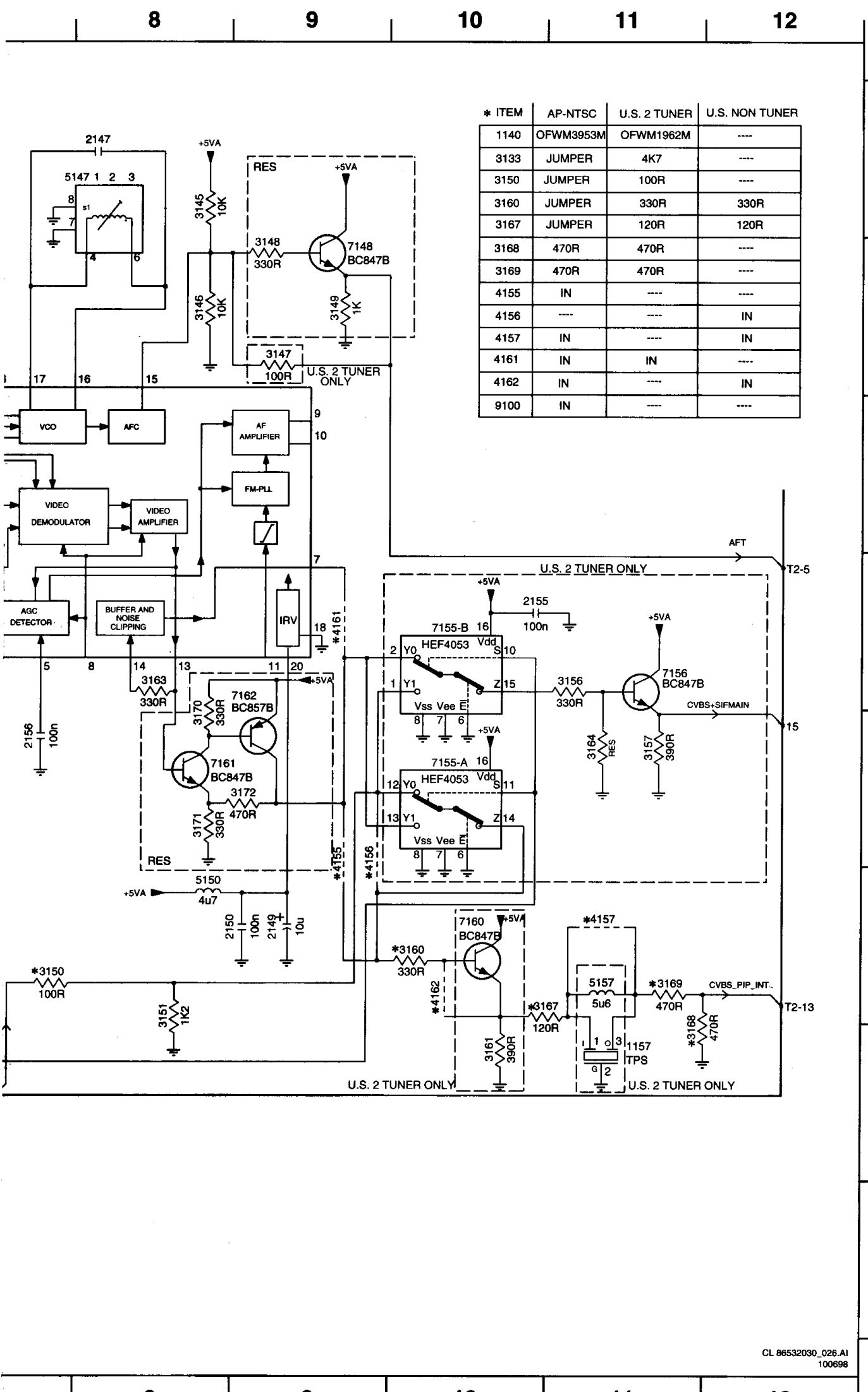
Y28 B1
2225 B8
2226 B8
2227 D7
3225 E5
3332 D5
3333 D5
3336 B7
3337 D7
3338 D8
3339 D7
4229 C5
4330 C5
4331 C5
4334 A5
4335 A5
4336 C2
4337 C2
4338 C2
7770 B6
Y904 B1
Y905 B3


OSD PANEL
+5V
5100
5u6
5101
56u
2103
100n
2100
47u
7101
PCA8515P
O07
TO MO7 OF CONTROLS
A8
SDA
SCL
3100
1K
6100
BAS216
2101
21 VDD
12 VSS
13 RESET
9 SCLISCLK
8 SDAISIN
14 E
15 HIO_II2C
EXT/INT DATA SWITCHING BUFFER
I2C SLAVE RECEIVER OR HIGH-SPEED I/O BUFFER
CHAR SIZE REGISTER/ CONTROL
WRITE ADDRESS COUNTER
HORIZONTAL POSITION REGISTER/ COUNTER
VERTICAL POSITION REGISTER/ COUNTER
3101
100R
3102
100R
O08
TO J9Q2 OF DOUBLE WINDOWS PANEL
OR
TO P07 OF YC PIP PANEL
T1
3103
10K
2114
1u
2102
220n
2115
120p
3127
1M
5 C
7 HSYNC
6 VSYNC
PLL OSC
CSYNC SEPAR
INSTRUCTION DECODER
INTERNAL SYNCHRONOUS CIRCUIT
CRYSTAL OSCILLATOR
5
CONTROL SIGNALS
XTA2O
XTA1I
TST1
11
10
4
O06
3125
100R
3126
100R
TO MO6 OF CONTROLS
A8
2113
3n3
1101
4M433619
2106
27p
2107
27p

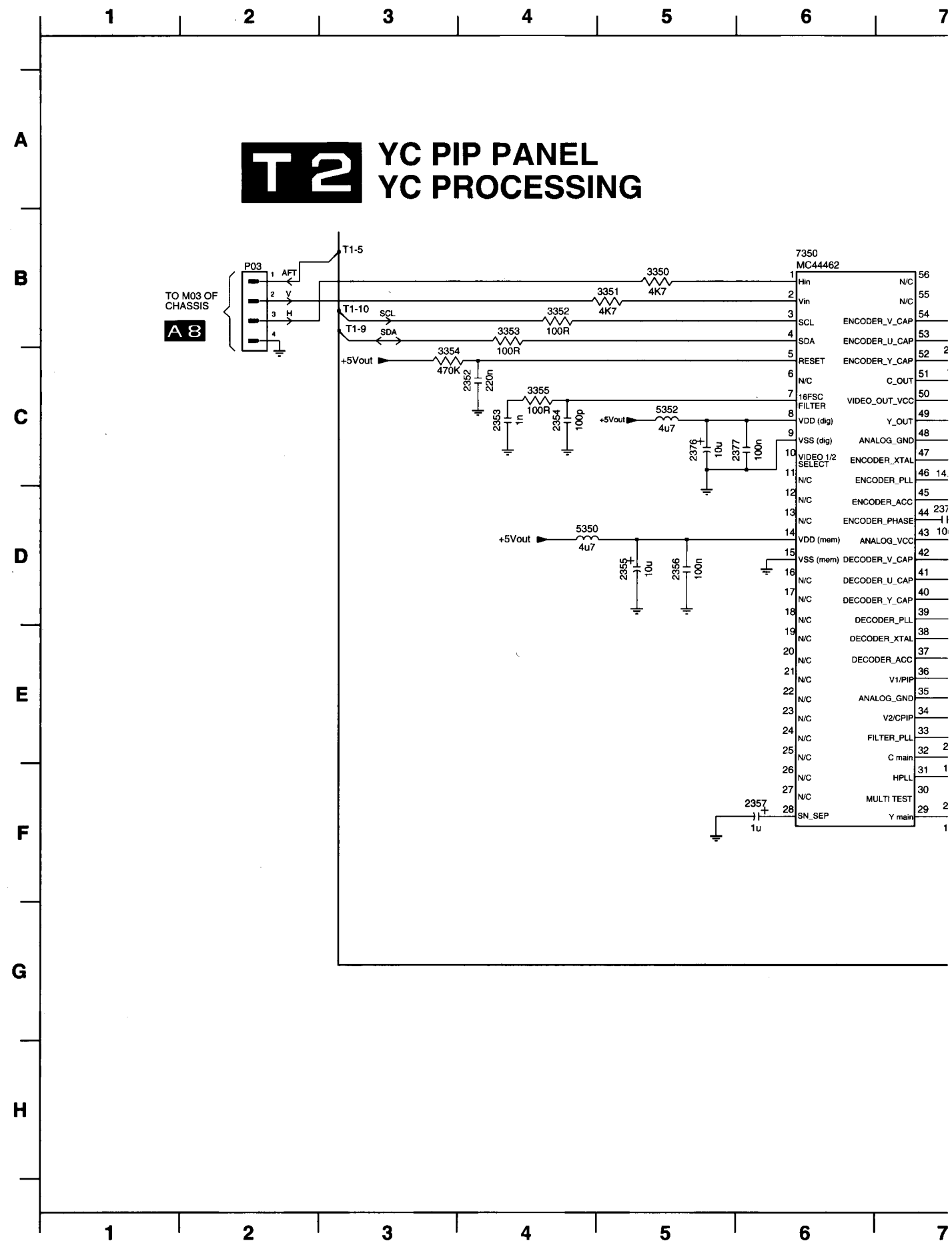


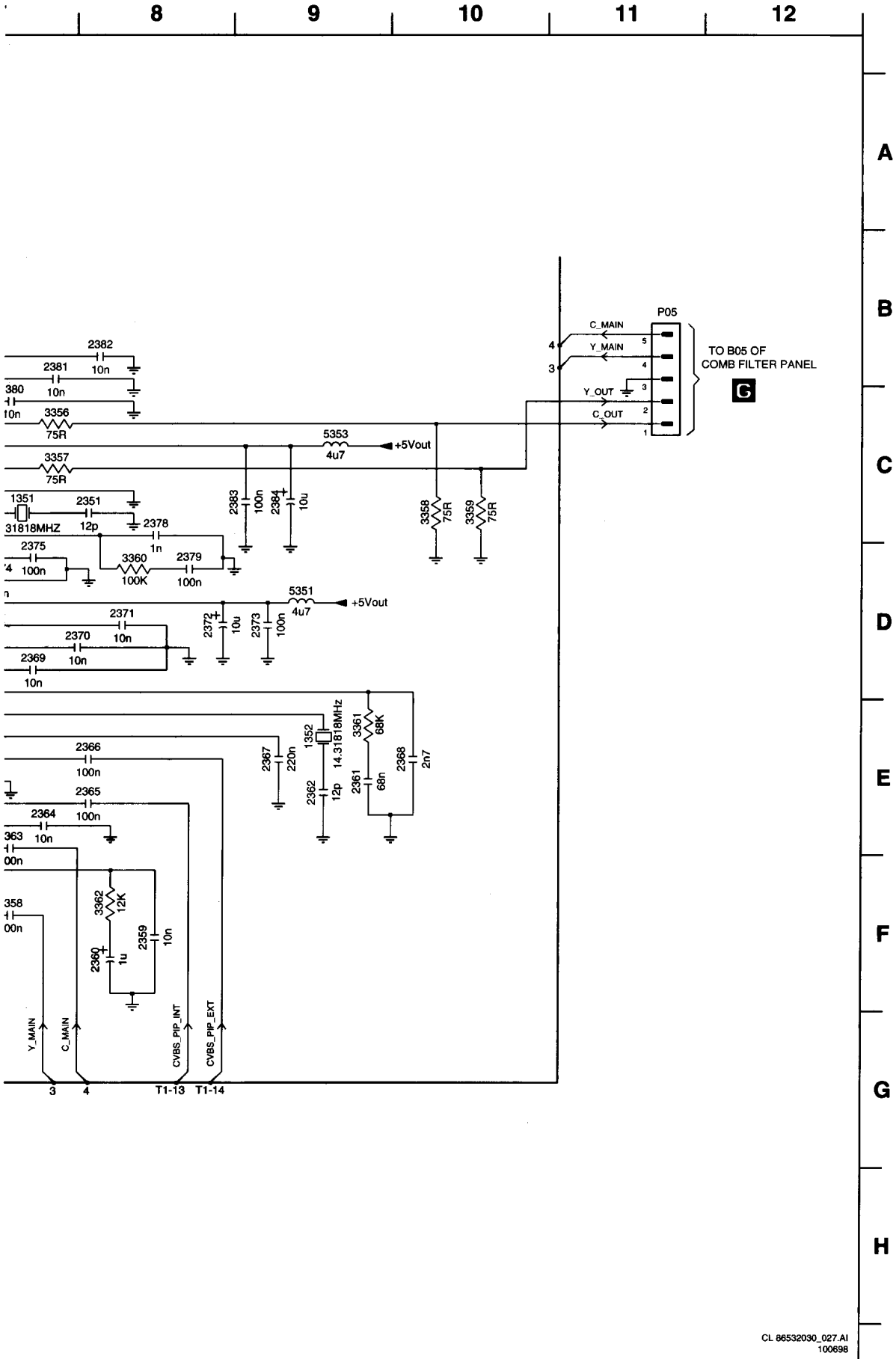
O05 E11
O06 D1
O07 B1
O08 C1
1101 E6
2100 B3
2101 C2
2102 D3
2103 B3
2104 C8
2106 E5
2107 E6
2108 C8
2109 F8
2110 F9
2111 F9
2112 F10
2113 D4
2114 D2
2115 D3
3100 B2
3101 C3
3102 C3
3103 C3
3117 E8
3118 E8
3119 E8
3120 F8
3121 F8
3122 F8
3123 F9
3124 F9
3125 D2
3126 D3
3127 D3
4100 E8
4101 E8
4102 E8
4103 F8
5100 A4
5101 A4
6100 B3
6103 E7
6104 E7
6105 E7
6106 F7
7101 B4


T 1
YC PIP PANEL
2ND FRONT END
AP-NTSC ONLY
1125
MDLM3Z
BST
ATT
SPLITTER
GND
GND
+5VA
3131
4K7
3132
RES
100R
3129
100R
3130
AP-NTSC ONLY
1126
TELH9-205A
GND
2125
100u
2126
100u
3126
10K
3127
10K
3128
33K
2144
100n
3144
330R
7140
TDA9800T
TRAVELING
WAVE
DIVIDER
FREQUENCY
DETECTOR
AND PHASE
DETECTOR
VIF AMP
TUNER
AGC
IF
AGC
SCL
SDA
100R
3165
100R
3166
1127
TELH9-206A
GND
*3133
4K7
3134
RES
U.S. 2 TUNER ONLY
*1140
OFWM3953M
5100
1u
+5Vout
5125
4u7
+5VA
+33V
2127
47n
3140
47K
3141
RES
3142
5K6
2148
4u7
U.S. 2 TUNER ONLY
+5V
3181
470R
7101
BC557B
3182
1K
*9100
SEMI_STD
3180
470R
7100
BC847B
+5Vout
CVBS_PIP
SEL_TUNER1_2
6
7 T2-9
8 T2-10
11
12 T2-14
15
12
P07
SEMI_STD
SDA
SCL
+5V
TO O08 OF
OSD PANEL
S
P10
SEL_TUNER1_2
+33V
CVBS_PIP
+8V
CVBS_PIP_EXT
CVBS+SIFMAIN
TO M10 OF
CHASSIS
A 4

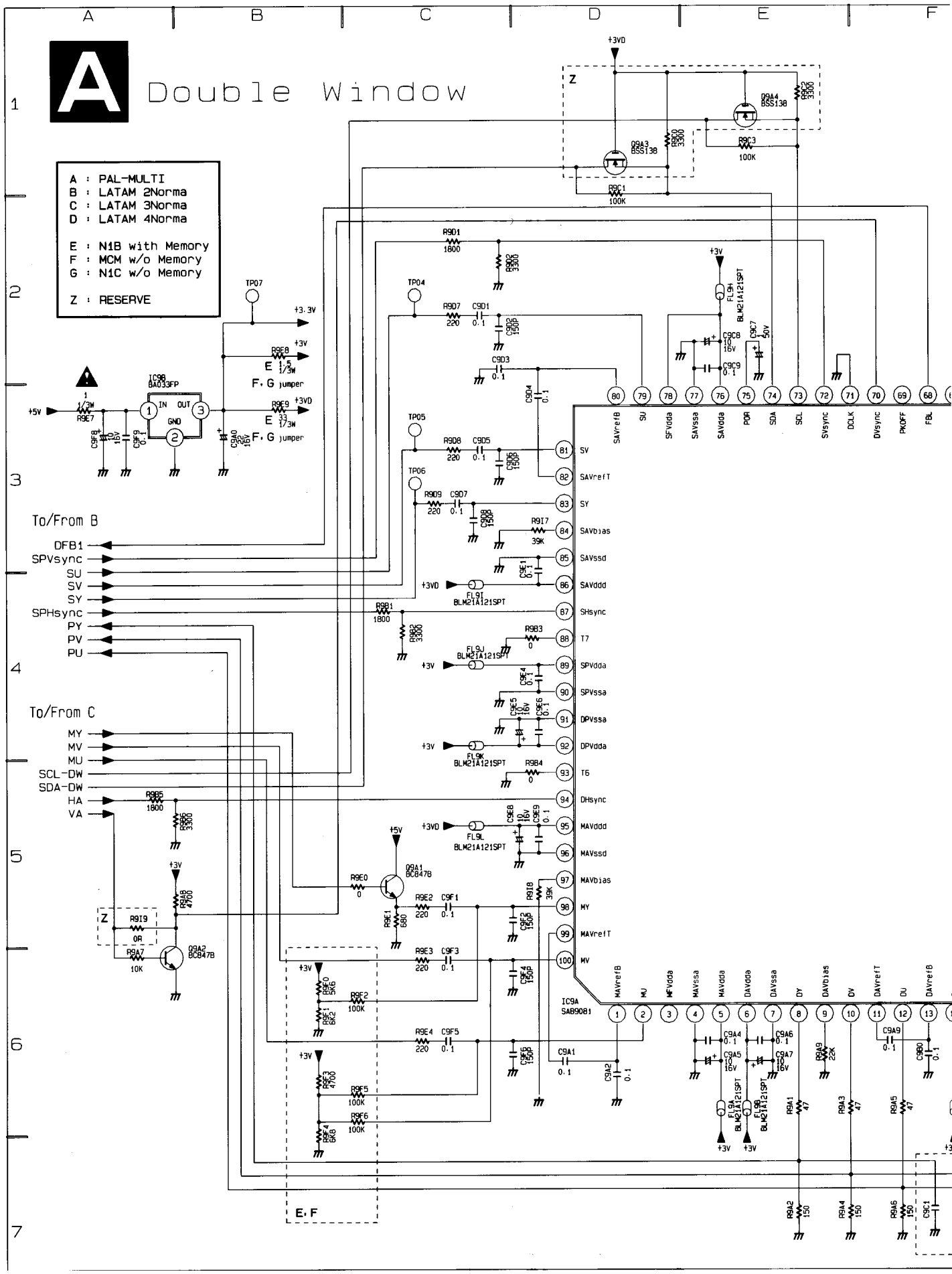


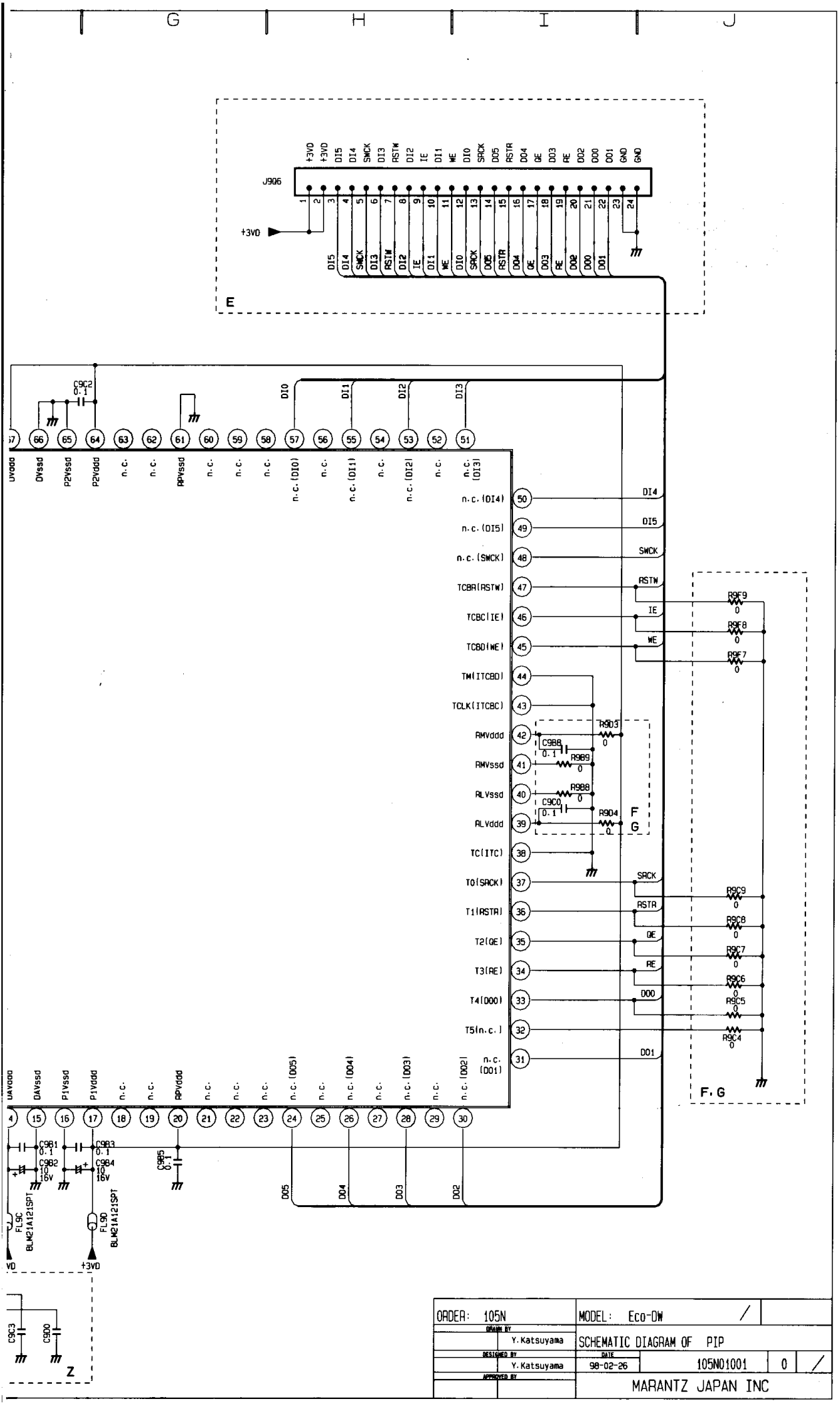
P07 G2
P10 G5
1125 A2
1126 A3
1127 C3
1140 C5
1157 G11
2125 B5
2126 B5
2127 E4
2144 B6
2147 A8
2148 E7
2149 F9
2150 F9
2155 D10
2156 E7
3126 A5
3127 B5
3128 B5
3129 B3
3130 B3
3131 A3
3132 B3
3133 C2
3134 C2
3140 E6
3141 E7
3142 E7
3144 B7
3145 A8
3146 B8
3147 B9
3148 B9
3149 B9
3150 F7
3151 F8
3156 D11
3157 E11
3160 F10
3161 G10
3163 D8
3164 E11
3165 C3
3166 C3
3167 F11
3168 G11
3169 F11
3170 E8
3171 E8
3172 E9
3180 F3
3181 E3
3182 E3
4155 E9
4156 E9
4157 F11
4161 D9
4162 F10
5100 C4
5125 D3
5147 A7
5150 F8
5157 F11
7100 F3
7101 E4
7140 B6
7148 B9
7155-A E10
7155-B D10
7156 D11
7160 F10
7161 E8
7162 D8
9100 E4


T2
YC PIP PANEL
YC PROCESSING
TO M03 OF CHASSIS
A8
P03
AFT
V
H
T1-5
T1-10
SCL
T1-9
SDA
+5Vout
3350 4K7
3351 4K7
3352 100R
3353 100R
3354 470K
2352 220n
3355 100R
2353 1n
2354 100p
5352 4u7
2376 10u
2377 100n
5350 4u7
2355 10u
2356 100n
2357 1u
7350
MC44462
Hin
Vin
SCL
SDA
RESET
N/C
16FSC FILTER
VDD (dig)
VSS (dig)
VIDEO 1/2 SELECT
VDD (mem)
VSS (mem)
SN_SEP
ENCODER_V_CAP
ENCODER_U_CAP
ENCODER_Y_CAP
C_OUT
VIDEO_OUT_VCC
Y_OUT
ANALOG_GND
ENCODER_XTAL
ENCODER_PLL
ENCODER_ACC
ENCODER_PHASE
ANALOG_VCC
DECODER_V_CAP
DECODER_U_CAP
DECODER_Y_CAP
DECODER_PLL
DECODER_XTAL
DECODER_ACC
V1/PIP
ANALOG_GND
V2/CPIP
FILTER_PLL
C main
HPLL
MULTI TEST
Y main



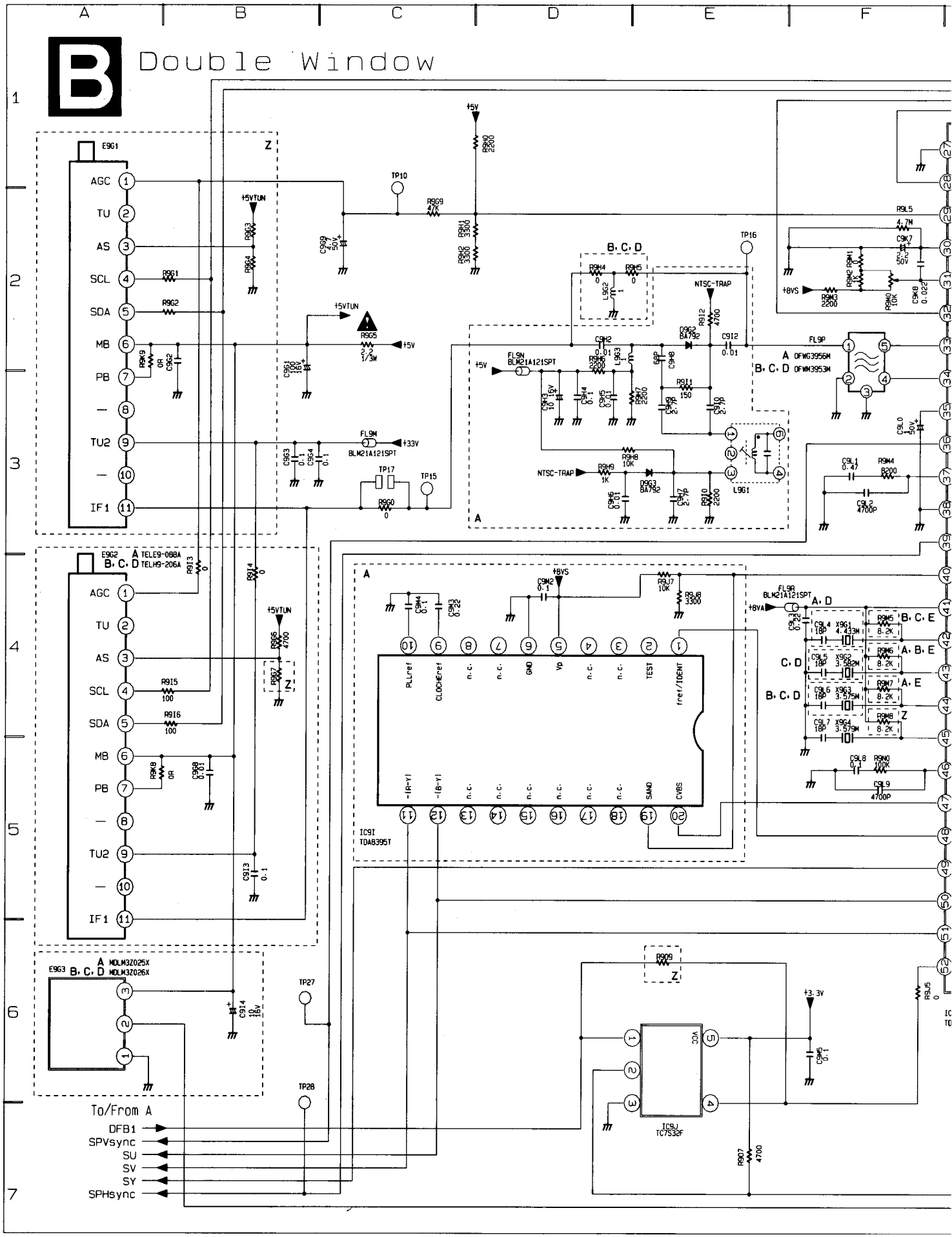
P03 B2
P05 B11
1351 C7
1352 E9
2351 C8
2352 C4
2353 C4
2354 C4
2355 D5
2356 D5
2357 F6
2358 F7
2359 F8
2360 F8
2361 E9
2362 E9
2363 E7
2364 E7
2365 E8
2366 E8
2367 E9
2368 E10
2369 D7
2370 D7
2371 D8
2372 D8
2373 D9
2374 D7
2375 D7
2376 C5
2377 C6
2378 C8
2379 D8
2380 C7
2381 B7
2382 B8
2383 C9
2384 C9
3350 B5
3351 B5
3352 B4
3353 B4
3354 C3
3355 C4
3356 C7
3357 C7
3358 C10
3359 C10
3360 D8
3361 E9
3362 F8
5350 D4
5351 D9
5352 C5
5353 C9
7350 B6

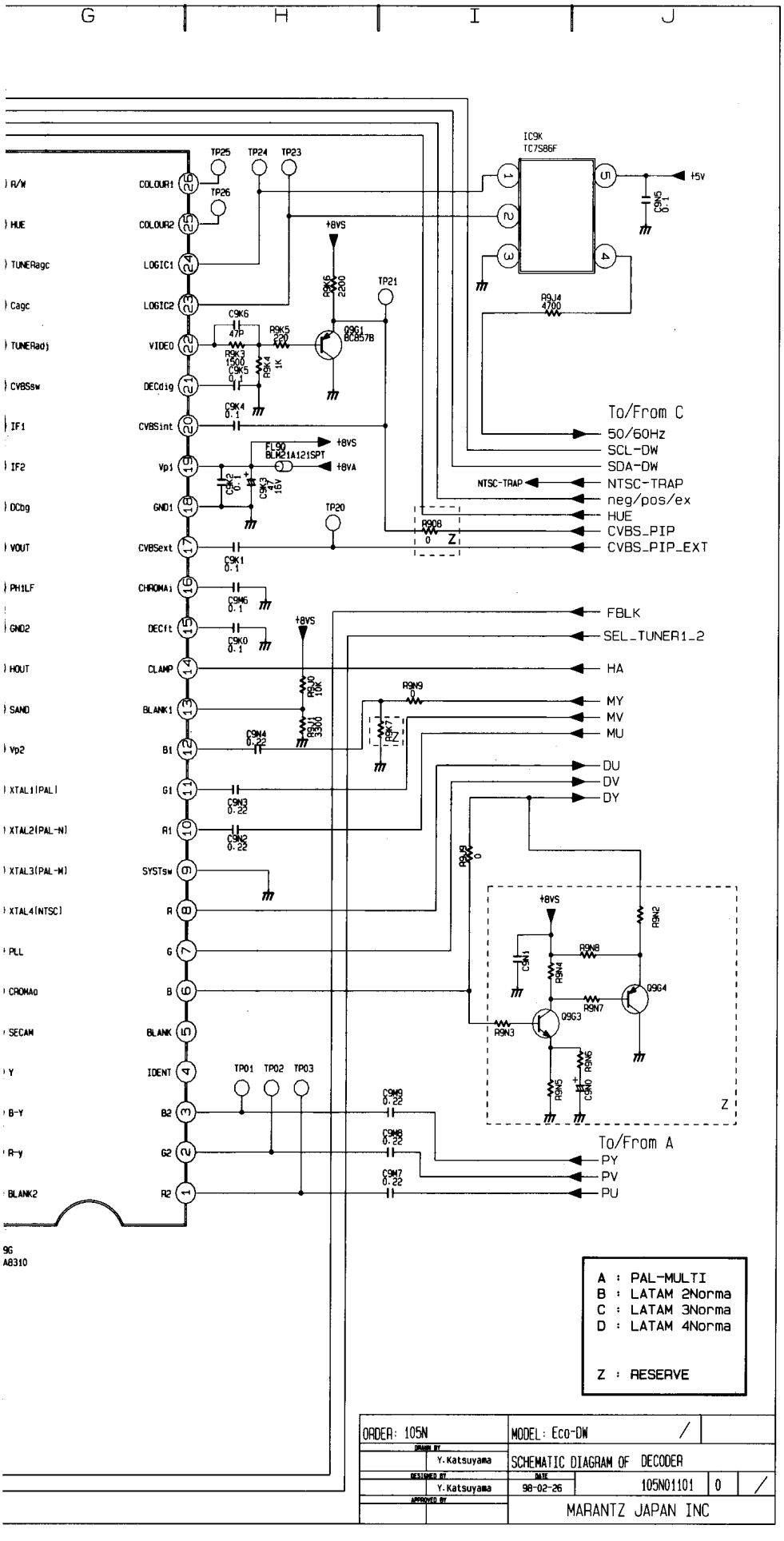

A
Double Window
A : PAL-MULTI
B : LATAM 2Norma
C : LATAM 3Norma
D : LATAM 4Norma
E : N1B with Memory
F : MCM w/o Memory
G : N1C w/o Memory
Z : RESERVE
To/From B
DFB1
SPVsync
SU
SV
SY
SPHsync
PY
PV
PU
To/From C
MY
MV
MU
SCL-DW
SDA-DW
HA
VA
IC9A
SAB9081
IC98
BA033FP
E F.G jumper
E F.G jumper
E F
Z



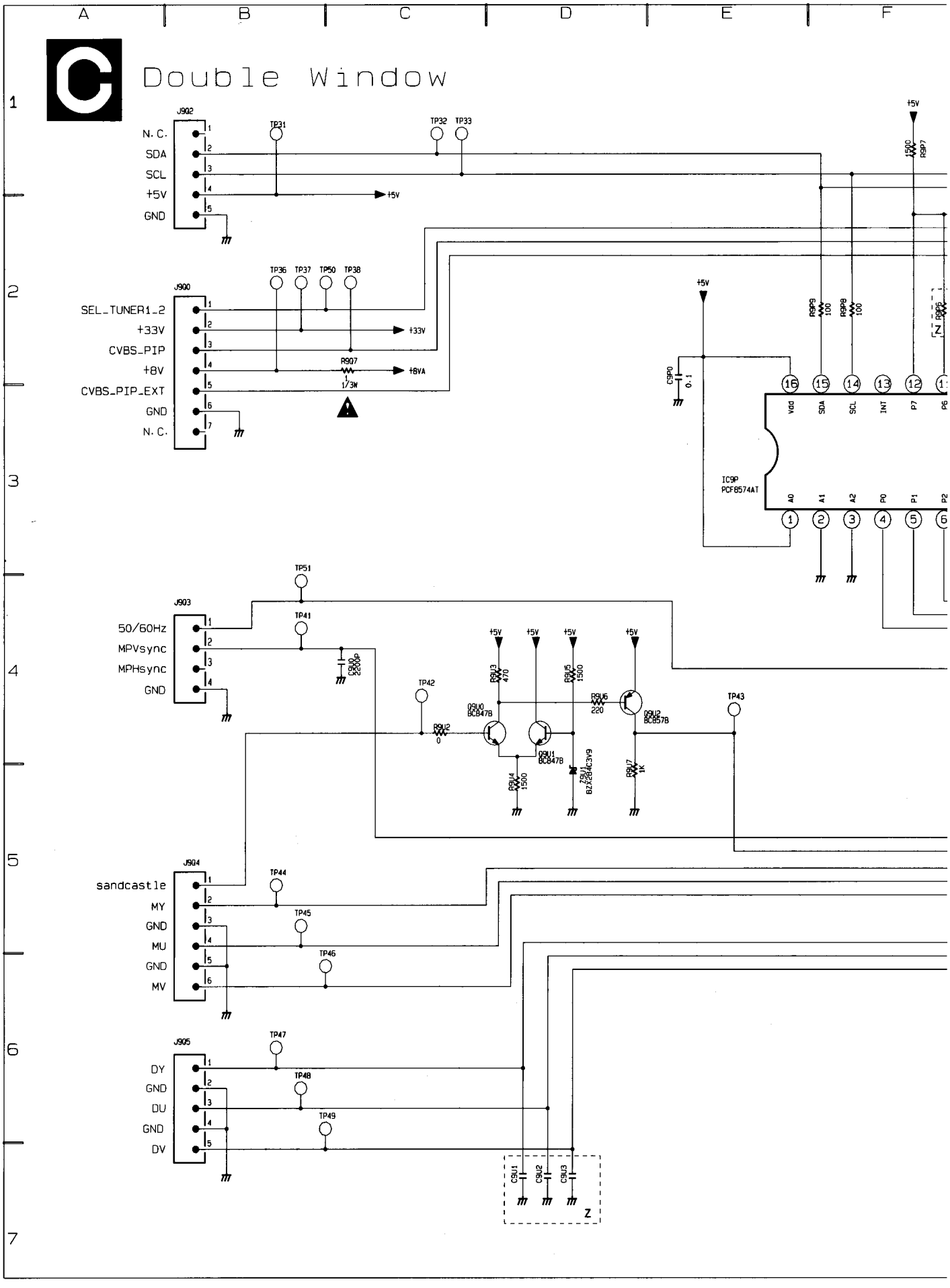
ORDER: 105N	MODEL: Eco-DW	
DRAWN BY: Y. Katsuyama	SCHEMATIC DIAGRAM OF PIP	
DESIGNED BY: Y. Katsuyama	DATE: 98-02-26	105N01001 0
APPROVED BY:	MARANTZ JAPAN INC	

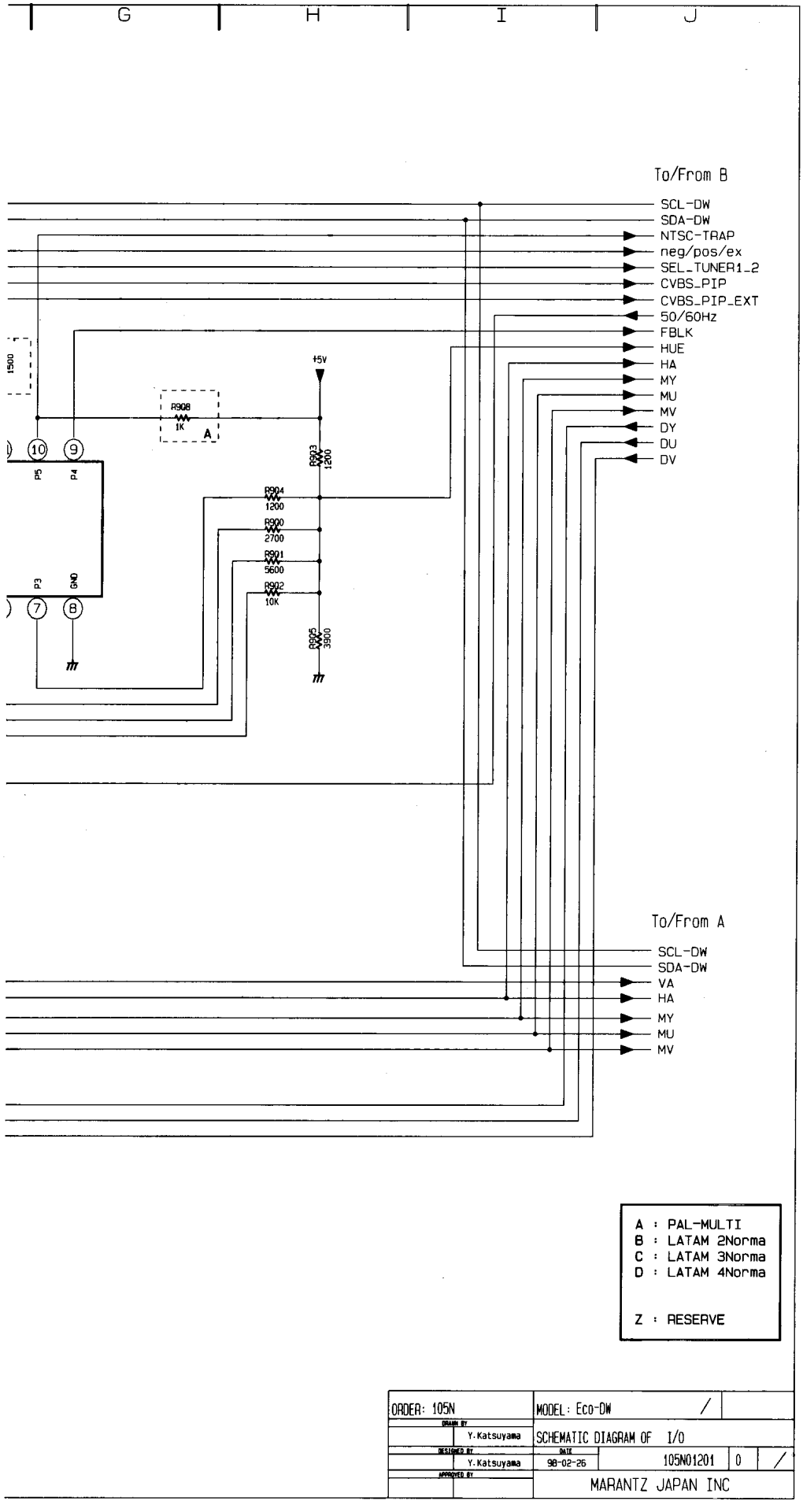
C9B8	I4	TP06	C3
C9C0	I4	TP05	C3
IC9A	D6	R9B3	D4
R9E7	A3	TP04	C2
C9F8	A3	R9A2	E7
C9A0	B3	R9A4	F7
C9D0	F7	R9A6	F7
C9C3	F7	C9D6	C3
C9F9	A3	C9D8	C3
C9F6	D6	C9A7	E6
C9A4	E6	R9E1	C5
C9A9	F6	Q9A1	C5
C9B0	F6	C9F3	C6
FL9A	E6	C9F1	C5
C9A5	E6	R9E3	C6
C9B3	F6	C9A1	D6
R9D3	I4	C9B1	F6
R9B9	I4	R9E2	C5
C9C9	E3	C9D7	C3
C9C8	E2	C9D5	C3
R9A9	E6	R9D8	C3
C9C2	F2	R9D9	C3
C9E9	D5	C9F5	C6
R9I8	D5	R9E4	C6
J9Q6	H1	C9D2	C2
C9E4	D4	FL9C	F6
IC9B	B3	C9B2	F6
FL9J	C4	C9A2	D6
C9B5	G6	C9D1	C2
R9B1	C4	R9D7	C2
R9B2	C4	R9B5	A5
C9C7	E2	R9B6	B5
R9B8	I4	Q9A2	A6
C9E6	D4	R9A8	B5
TP07	B2	R9B4	D5
C9E5	D4	R9D2	C2
FL9D	G6	R9F2	C6
R9D4	I5	R9F5	C6
R9C4	J6	R9F6	C7
R9C5	J5	R9F4	B7
C9B4	F6	R9F3	B6
C9E8	D5	R9F1	B6
FL9K	C5	R9F0	B6
FL9L	C5	R9C8	J5
R9C6	J5	R9C9	J5
R9C7	J5	R9F7	J4
C9C1	F7	R9F8	J4
FL9H	E2	R9F9	J3
C9F2	D5	R9E8	B2
C9E1	D4	R9E9	B3
FL9I	C4	R9A7	A6
R9A1	E6	Q9A3	D1
C9A6	E6	Q9A4	E1
R9A3	F6	R9C1	D2
C9F4	D6	R9C3	E1
C9D4	D3	R9C0	D1
FL9B	E6	R9C2	E1
C9D3	C3	R9D1	C2
R9E0	C5	R9I7	D3
R9A5	F6	R9I9	A5


B Double Window
A B C D E F
1 2 3 4 5 6 7
E9G1
AGC
TU
AS
SCL
SDA
MB
PB
TU2
IF1
E9G2
A TELE9-088A
B, C, D TELH9-206A
E9G3
A MDLM3Z025X
B, C, D MDLM3Z026X
+5V
+5VTUN
+8VS
+33V
+3.3V
TP10
TP15
TP16
TP17
TP27
TP28
B, C, D
NTSC-TRAP
FL9N BLM21A121SPT
FL9P
FL9R BLM21A121SPT
A OFWG3956M
B, C, D OFWM3953M
L9G1
IC9I TDA8395T
PLLref
CLOCKRef
n.c.
GND
Vp
TEST
fref/IDENT
-(R-Y)
-(B-Y)
SAND
CVBS
IC9J TC7S32F
VCC
To/From A
DFB1
SPVsync
SU
SV
SY
SPHsync

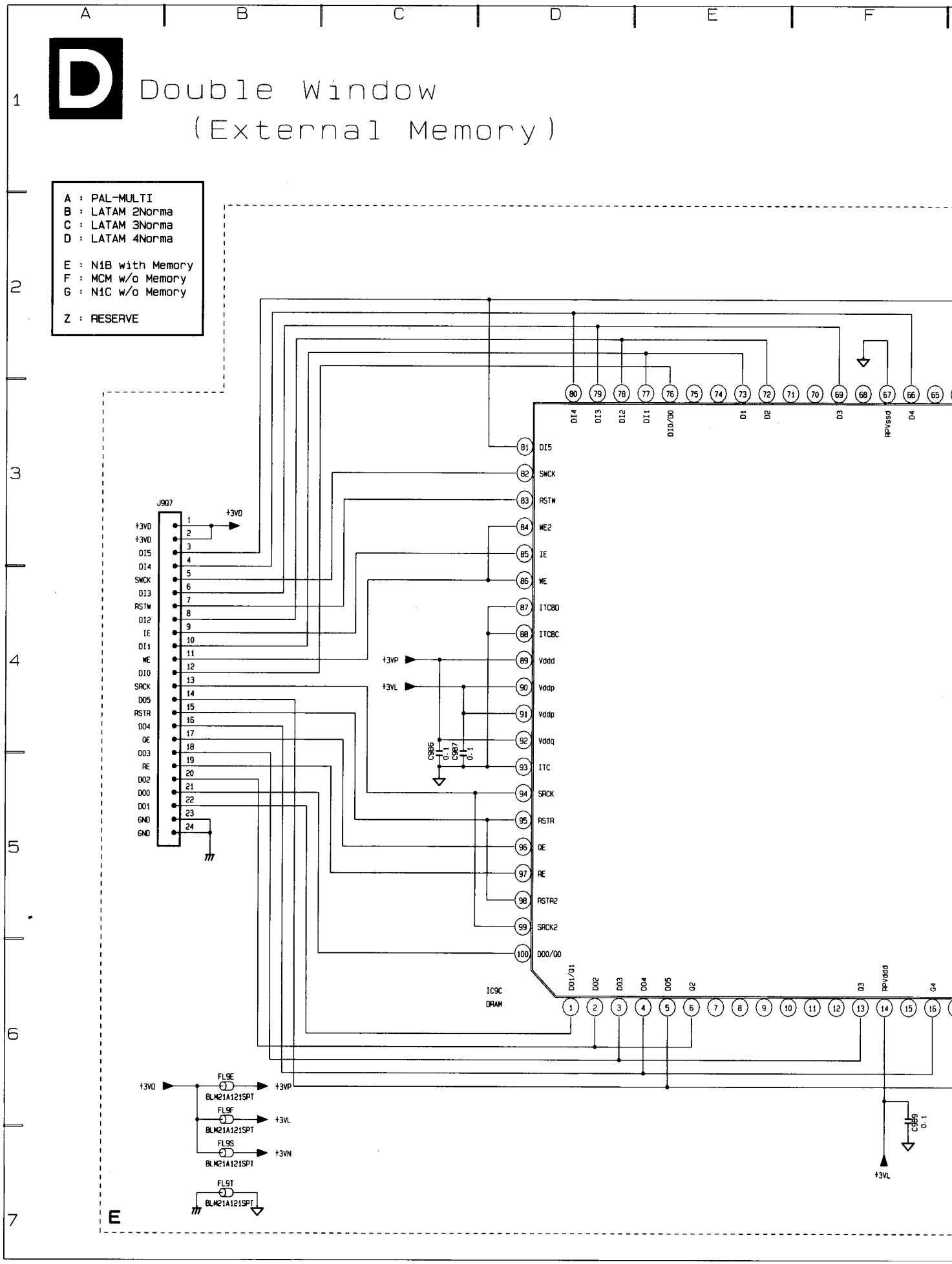


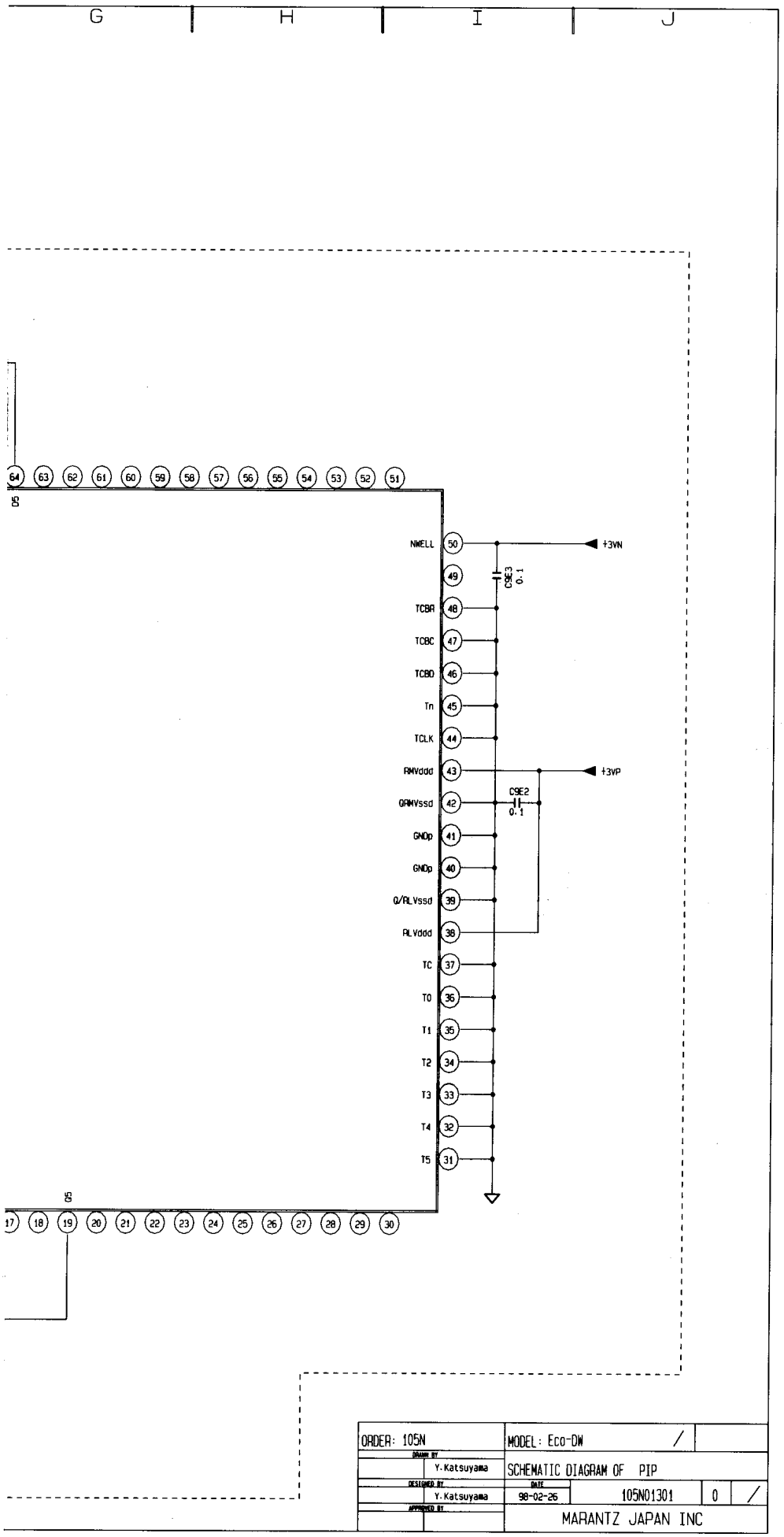
IC9J	E6	R9H6	D3
R9G9	C2	D9G2	E2
R9I3	B4	C9H8	E2
R9N0	F5	C9H9	E3
C9M5	F6	TP27	B6
IC9G	H6	C9I0	E3
R9N2	J5	C9H7	E3
R9H2	D2	C9H6	D3
R907	E7	D9G3	E3
TP01	H5	R9H9	D3
R9G5	C2	R9H8	D3
R9G1	B2	R9I0	E3
R9K3	H2	R9I1	E3
C9K6	H2	C9I2	E2
C9K5	H2	TP10	C2
C9K4	H2	FL9P	F3
C9K0	H3	R9J5	F6
C9K1	H3	TP15	C3
TP02	H5	C9K7	F2
R9K5	H2	R9L5	F2
Q9G1	H2	R9M1	F2
L9G1	E3	R9M0	F2
R9M3	F2	C9K8	F2
R9K6	H2	R9M2	F2
FL9N	D3	C9M6	H3
C9K2	H3	R9I5	B4
C9K3	H3	R9I6	B5
FL9Q	H3	R9G7	B4
R9N9	I4	R9I4	B4
X9G1	F4	C9I3	B5
X9G2	F4	R9G6	B4
X9G3	F4	IC9I	E4
X9G4	F5	E9G3	A6
C9L7	F5	TP21	I2
C9L6	F4	TP20	H3
C9L5	F4	C9G8	B5
C9L4	F4	C9M4	C4
R9J7	E4	C9M3	C4
R9H4	D2	C9M2	D4
R9H5	D2	E9G1	A2
L9G2	D2	E9G2	A4
R9M6	F4	C9I4	B6
R9M7	F4	C9L8	F5
R9G2	B2	R909	E6
R9M8	F4	TP25	H1
R9M5	F4	TP26	H2
C9L3	F4	TP24	H1
FL9R	F4	TP23	H1
C9L0	F3	R9H1	D2
R9M4	F3	R9H0	D1
R9J8	E4	IC9K	I1
FL9M	C3	C9N4	H4
R9K9	A3	R9J0	H4
R9G4	B2	R9J1	H4
R9G3	B2	R9K7	I4
C9G4	C3	C9N3	H4
C9G2	B3	Q9G3	I5
C9G1	B3	R9K4	H2
C9L2	F3	Q9G4	J5
R908	I3	R9N3	I5
TP03	H5	C9N2	H4
C9G3	B3	R9J9	I4
R9G0	C3	R9N5	I5
TP28	B7	R9N6	J5
C9L1	F3	R9N8	J5
C9L9	F5	R9N7	J5
C9G9	C2	R9N4	I5
C9H2	D2	C9M8	I6
C9H5	D3	C9M7	I6
R9H7	E3	C9M9	I5
R9I2	E2	R9J4	I2
L9G3	E3	C9N1	I5
TP16	E2	C9N0	J5
C9H3	D3	C9N5	J1
C9H4	D3	R9K8	B5


Double Window
J902
N. C.
SDA
SCL
+5V
GND
TP31
TP32
TP33
J900
SEL_TUNER1_2
+33V
CVBS_PIP
+8V
CVBS_PIP_EXT
GND
N. C.
TP36
TP37
TP50
TP38
R907
1/3W
+8VA
IC9P
PCF8574AT
Vdd
SDA
SCL
INT
P7
A0
A1
A2
P0
P1
J903
50/60Hz
MPVsync
MPHsync
GND
TP51
TP41
TP42
TP43
Q9U0
BC847B
Q9U1
BC847B
Q9U2
BC857B
R9U2
0
R9U3
470
R9U4
1500
R9U5
1500
R9U6
220
R9U7
1K
Z9U1
BZX284C3V9
J904
sandcastle
MY
GND
MU
GND
MV
TP44
TP45
TP46
J905
DY
GND
DU
GND
DV
TP47
TP48
TP49
C9U1
C9U2
C9U3
Z



R9U2	C4
IC9P	E3
R9Q3	H3
R9Q4	H3
R9Q5	H3
R9Q0	H3
R9Q1	H3
J9Q2	B2
R9Q2	H3
J9Q4	B5
TP51	B4
TP50	C2
C9U3	D7
R9P9	F2
R9P8	F2
J9Q3	B4
C9U2	D7
J9Q5	B6
J9Q0	B3
C9U1	D7
TP47	B6
TP48	B6
TP49	C7
TP44	B5
TP45	B6
TP46	C6
TP36	B2
TP37	B2
TP32	C1
TP33	C1
TP41	B4
TP42	C4
R9Q8	G2
R9Q7	C3
C9U0	C4
TP38	C2
TP31	B1
C9P0	E3
R9P6	F2
R9P7	F1
TP43	E4
Q9U0	C4
Q9U1	D4
Q9U2	D4
R9U6	D4
R9U3	D4
R9U5	D4
R9U4	D5
R9U7	D5
Z9U1	D5

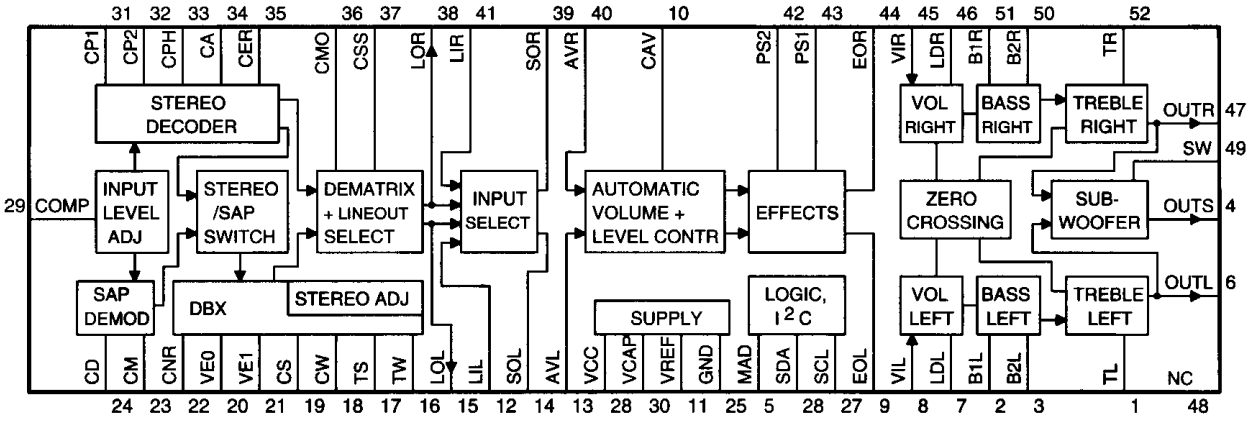

A
B
C
D
E
F
1
2
3
4
5
6
7
D
Double Window
(External Memory)
A : PAL-MULTI
B : LATAM 2Norma
C : LATAM 3Norma
D : LATAM 4Norma
E : N1B with Memory
F : MCM w/o Memory
G : N1C w/o Memory
Z : RESERVE
J907
+3VD
DI5
DI4
SWCK
DI3
RSTW
DI2
IE
DI1
WE
DI0
SACK
DO5
RSTR
DO4
OE
DO3
RE
DO2
DO0
DO1
GND
GND
+3VP
+3VL
C986
0.1
C987
0.1
DI5
SWCK
RSTW
WE2
IE
WE
ITCBO
ITCBC
Vddd
Vddp
Vddp
Vddq
ITC
SACK
RSTR
OE
RE
RSTR2
SACK2
DO0/QO
DI4
DI3
DI2
DI1
DI0/DO
DI
D2
D3
RPVssd
D4
IC9C
DRAM
DO1/Q1
DO2
DO3
DO4
DO5
Q2
Q3
RPVddd
Q4
FL9E
BLM21A121SPT
FL9F
BLM21A121SPT
FL9S
BLM21A121SPT
FL9T
BLM21A121SPT
C989
0.1
E



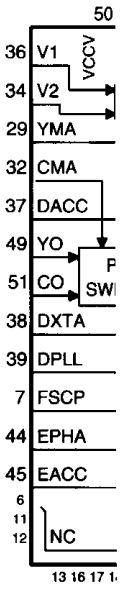
C9B6	C5
C9B7	C5
C9B9	F7
C9E2	I4
C9E3	I3
FL9E	B6
FL9F	B7
FL9S	B7
FL9T	B7
IC9C	D6
J9Q7	B3

ORDER: 105N	MODEL: Eco-DW /		
DRAWN BY: Y.Katsuyama	SCHEMATIC DIAGRAM OF PIP		
DESIGNED BY: Y.Katsuyama	DATE: 98-02-26	105N01301	0 /
APPROVED BY:	MARANTZ JAPAN INC		

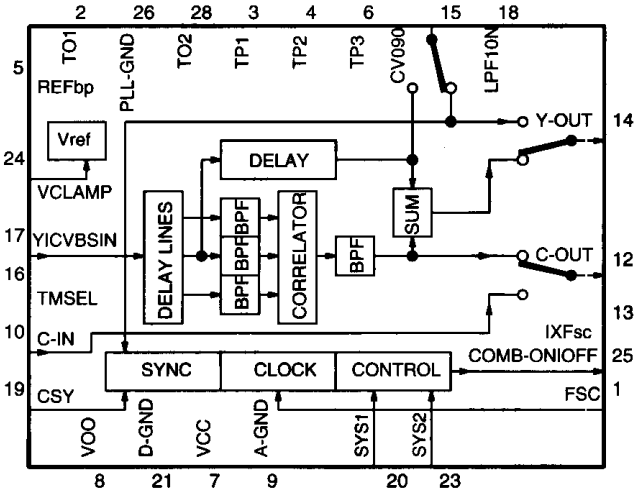
TDA9855 IIC-BUS CONTROLLED BTSC STEREO/SAP DECODER AND AUDIO PROCESSOR
IC 7437 on Audio processing BTSC **A10**



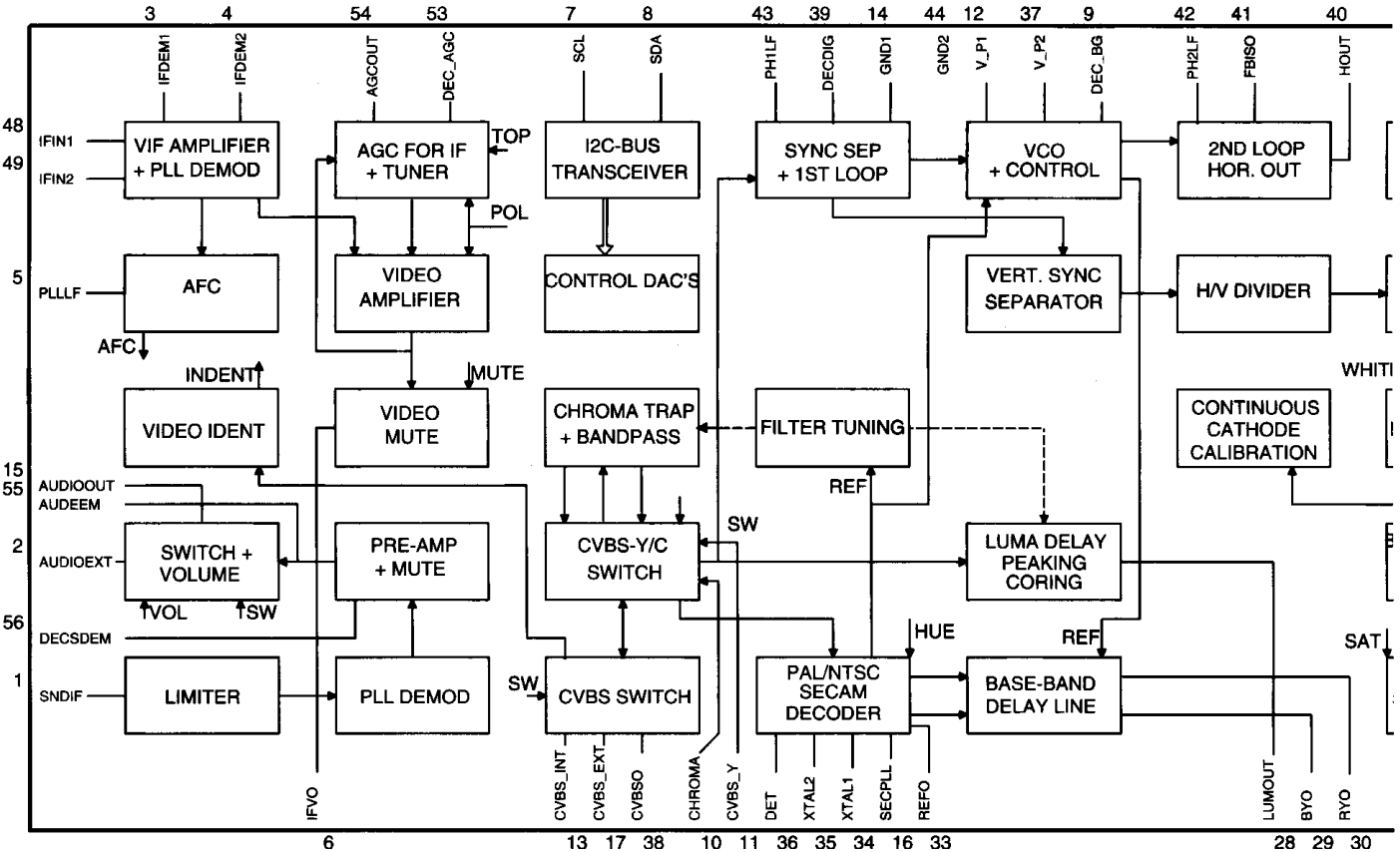
MC44462
IC 7350 or

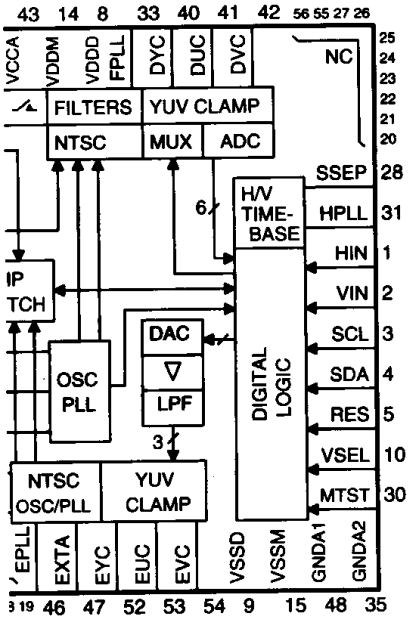


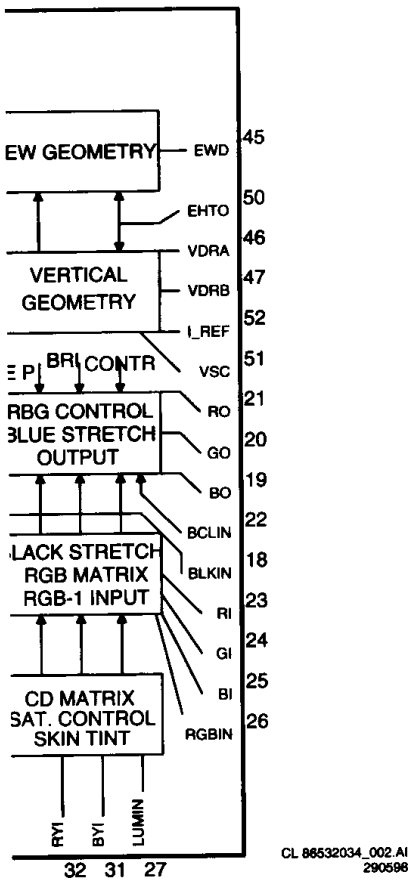
SAA4961 MULTI-STANDARD COMB FILTER
IC 7000 on COMB filter panel **G**



TDA8844 PAL/NTSC/SECAM TV PROCESSOR
IC 7150 on Tuner+IF **A4**, Video processing **A5**, Synchronisation **A6** and RGB processing **A7**




43 14 8 33 40 41 42 56 55 27 26
VCCA
VDDM
VDDD
FPLL
DYC
DUC
DVC
NC
25
24
23
22
21
20
FILTERS
YUV CLAMP
NTSC
MUX
ADC
SSEP 28
H/V TIME-BASE
HPLL 31
HIN 1
VIN 2
SCL 3
SDA 4
RES 5
VSEL 10
MTST 30
6
IP
TCH
DAC
OSC PLL
LPF
3
DIGITAL LOGIC
NTSC OSC/PLL
YUV CLAMP
EPLL
EXTA
EYC
EUC
EVC
VSSD
VSSM
GNDA1
GNDA2
3 19 46 47 52 53 54 9 15 48 35


EW GEOMETRY
EWD 45
EHTO 50
VDRA 46
VERTICAL GEOMETRY
VDRB 47
I_REF 52
BRI CONTR
VSC 51
RBG CONTROL
BLUE STRETCH
OUTPUT
RO 21
GO 20
BO 19
BCLIN 22
BLACK STRETCH
RGB MATRIX
RGB-1 INPUT
BLKIN 18
RI 23
GI 24
BI 25
RGBIN 26
CD MATRIX
SAT. CONTROL
SKIN TINT
RYI
BYI
LUMIN
32 31 27
CL 86532034_002.AI
290598

8 Alignments

General: the Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5.

8.1 Alignment conditions

All electrical adjustments should be performed under the following conditions:

- Warm-up time: 10 minutes
- The voltages and oscillograms are measured in relation to the tuner earth.
- Test probe: Ri > 10MΩ Ci < 2,5 pF.

8.2 Electrical alignments

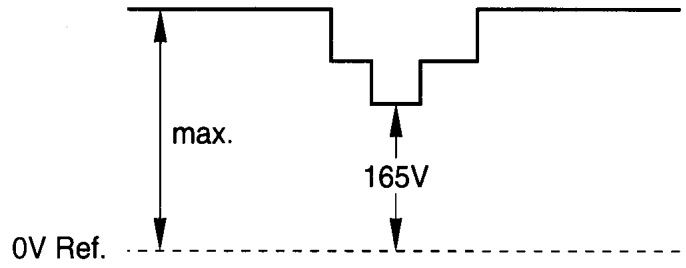
8.2.1 VG2

Rough alignment

Using a pattern generator displaying a circle pattern, adjust the VG2 potmeter of LOT L5630 to obtain normal picture.

Fine adjustment

Connect RF output of the pattern generator to antenna. Test pattern: blank pattern (blank screen on CRT). Set brightness, colour and contrast to minimum. Set the time base of the oscilloscope to 0.5ms with external triggering of the vertical pulse. Measure the black level pulse during the vertical flyback at the RGB cathodes of the CRT.



86532031_007.AI
020698

Figure 8.1: Black level pulse

Adjust the value of the highest of the three guns with the VG2 pot meter of the LOT to 165Vdc.

8.2.2 Focus

- Set the smart picture setting to natural.
- Using a pattern generator displaying a crosshatch pattern, adjust the focus potmeter of LOT L5630 in such a way that the haze on the vertical lines at 2/3 from the left and right edges of the screen (just) disappears.

8.2.3 Alignment of IF sound trap (34.4MHz and 33.5MHz)

- Disconnect jumper 4149
- Inject a sinewave of 34.4MHz (PAL Multi) or 33.5MHz (/93) to anode of D6145 via the following network:

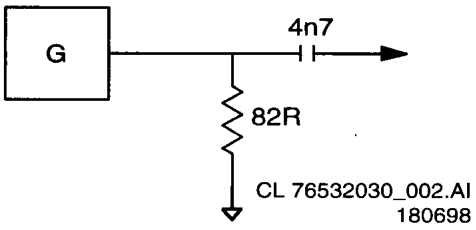


Figure 8.2: Measurement network

- Connect an oscilloscope to pin 1 & 2 of 1145
- Adjust coil 5145 for minimum output at 1145.

8.2.4 QSS demodulator (DK system sets)

- Tune the set to a particular station with NICAM DK transmission
- Connect an oscilloscope at pin 4 of M11B
- Adjust coil 5402 till minimum video content is reached at pin 4 of M11B

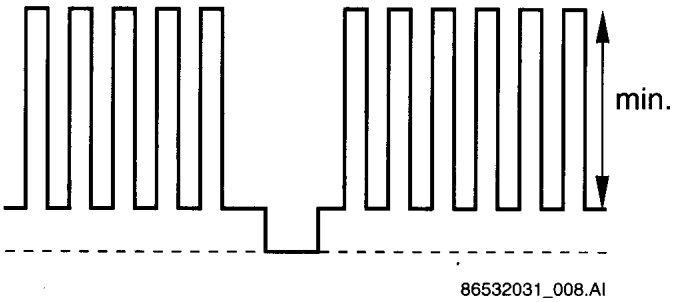


Figure 8.3: Signal at L5402

8.3 YC PIP

Before alignment, make sure following voltages are present:

- +5V at pin 4 of P07
- +8V at pin4 of P10
- insert an external 5V DC source at pin 1 of P07

VCO alignment

1. Connect an IF signal (no modulation) of 45.75 MHz 107dBuV to pin 1 of item 1140
2. Adjust S5147 till the DC voltage is 2.35V +/- 100mV at pin 15 of IC7140

AGC alignment

1. Connect an IF signal (no modulation) of 45.75MHz 107dBuV to pin 1 of item 1140
2. Adjust 3140 till 3V +/-0.3V DC at pin 1 of tuner 1126

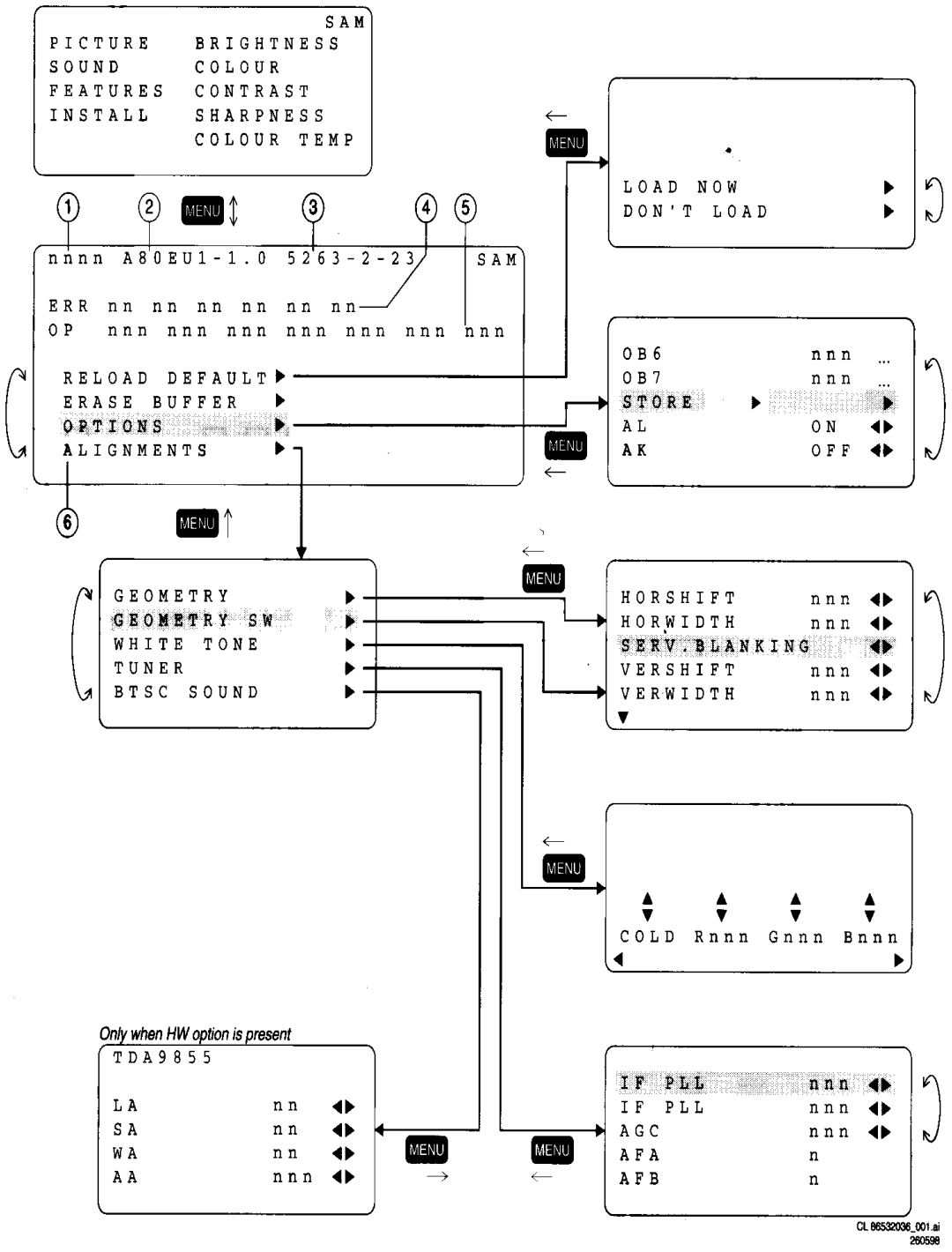
Phase alignment

1. Connect a current meter between pin 6 of IC7140 and an external DC source of 2.5V
2. Connect pin 19 of IC7140 to 5V
3. Adjust potmeter 3141 at pin 4 to (minimum) current reading of approximately 0 +/-0.2A

8.4 Software alignments (Service Alignment Mode)

With the software alignments of the Service Alignment Mode the geometry, white tone, tuner (IF) and BTSC sound settings can be aligned.

SAM Menu



Picture 8.4: Service Alignments Mode screens and structure

8.4.1 *Geometry alignments*

The geometry alignments menu contains 11 items to align a correct picture geometry. In widescreen sets, the GEOMETRY SW is available for separate alignments of the superwide (panorama) mode. The geometry alignments are:

- HORSHIFT (horizontal shift): align the horizontal centre of the picture to the horizontal centre of the CRT
- HORWIDTH (horizontal width): align the picture width (*)
- SERV.BLANKING (service blanking): switch on/off the blanking of the lower half of the screen (can be used in combination with the vertical alignments)
- VERSHIFT (vertical shift): align the vertical centre of the picture to the vertical centre of the CRT
- VERHEIGHT (vertical width): align the picture height (other vertical alignments are NOT compensated)
- VERSLOPE (Vertical slope): Align the vertical centre of the picture to the vertical centre of the CRT. (This is the first alignment to be performed of the vertical alignments)
- EW PARABO (E/W parabola): align straight vertical lines at the sides of the screen (*)
- EW TRAPEZ (E/W trapezium): align straight vertical lines in the middle of the screen (*)

- EW CORNER (E/W corner): align straight vertical lines in the corners of the screen (*)
- VER S-COR (vertical S-correction): align the vertical linearity, meaning that vertical intervals of a grid-pattern must be equal over the entire height.
- VERZOOM (vertical zoom): align the picture height (other vertical alignments are compensated)

Easy way to adjust vertical geometry. (4:3)

- Set VER S-COR to value 13
- Set VERZOOM to value 25
- Set SERV.BLANKING to 'ON'
- Adjust VERSLOPE till the test pattern centre line touches the centre edge
- Adjust VERSHIFT and VERHEIGHT till best fix the screen

8.4.2 White tone

In the white tone sub menu the colour values for the colour temperature values can be changed.

The colour temperature mode (NORMAL, WARM , COLD) or the colour (R, G, B) can be selected with the RIGHT/LEFT cursor keys. The mode or value can be changed with the UP/ DOWN cursor keys.

First the values for the NORMAL colour temperature should be selected. Than the offset values for the COLD and WARM mode can be selected. Note that the alignment values are non-linear

0 represent the middle value (no offset difference)

1-127 represent a positive offset (127 is the maximum positive offset) 128-256 represent a negative offset (128 is the maximum negative offset)

Scale:

Negative <<< 128, 256, 0, 1,..., 127 >>> Positive (0 = no offset)

8.4.3 Tuner

IF alignment; The IF PLL and IF PLL L' alignments are done automatically by the TDA8844. Changing the value has no effect

AGC alignment; With the AGC alignment, the automatic gain control crossover can be aligned. Adapt this setting in case the signal of a strong local transmitter is distorted.

AFA and AFB display the status of the automatic frequency control. Since this is automatically adjusted, these values do not have to be used.

8.4.4 BTSC adjustment

Composite level adjustment

- Connect RF output of the pattern generator PM5418 to antenna
- Adjust pattern generator to the following settings:
  - Frequency: 187.25mHz (channel 9)
  - RF amplitude: 1mVrms
  - Pattern: blank (no pattern is selected)
  - System: NTSC M
  - Carrier: ON
  - Test data: L=R=300Hz
- Set the TV set to MONO and SAP to OFF
- Activate SAM, select ALIGNMENT and then BTSC SND
- Measure at pin 15 or pin 38 of IC7437 TDA9855
- Adjust LA (level adjust) values until the output level is 500mVrms
- Press MENU keys on RC to store adjusted value

Stereo separation adjustment

1. Connect RF output of the pattern generator PM5418 to antenna
2. Adjust pattern generator to the following settings:
   - Frequency: 187.25mHz (channel 9)
   - RF amplitude: 1mVrms
   - Pattern: blank (no pattern is selected)
   - System: NTSC M
   - Carrier: ON
   - Test data: L=300 Hz R=3.1 kHz
3. Set the TV set to STEREO and SAP to OFF
4. Activate SAM, select ALIGNMENT and then BTSC SND
5. Connect pin 15 and pin 38 of IC7437 TDA9855 to ground
6. Select AA (auto adjust) and wait for at least one second
7. Notice that the SA (Spectral) and WA (wideband) will change. If necessary, adjust SA or WA for optimal result
8. Press MENU keys on RC to store adjusted values

8.5 Options

Options are used to control the presence / absence of certain features and hardware. There are two ways to change the option settings. The various option configurations and the descriptions of the two character-codes are explained in chapter 8 of the manual.

Changing a single option

An option can be selected with the MENU UP/DOWN keys and its setting can be changed with the MENU LEFT/RIGHT keys

Changing multiple options by changing option byte values

Option bytes make it possible to set very fast all options. An option byte represents a number of different options. All options of the A8 are controlled via 7 option bytes. Select the option byte (OB1, OB2, OB3, OB4, OB5, OB6 or OB7) and key in the new value.

Changes in the options and option bytes settings are saved by selected STORE and pressing the MENU RIGHT key. All changes are disregarded when the OPTION submenu is left without using the STORE command. Some changed will only take affect after the set has been switched OFF and ON with the mains switch.

8.5.1 List of options

Unless otherwise stated ON means present (or yes), OFF means not present (or no)

Table 8-1

Option	Functionality
AK	Auto Standby (after 2 hours of no activity via RC or keyboard)
AN	Auto Standby when 15 minutes no picture
AV	>1 AV Source
BM	Blue mute
CF	must be always ON when a PIP panel is present
CH	IF at 38.0MHz (ON = IF at 38.0MHz, OFF = IF at 38.9MHz) (not for NTSC sets)
CL	Child Lock (in FEATURE menu)
CM	Compress 16:9
CS	Customer Service Mode
DN	Dynamic Noise Reduction (in FEATURE menu)
DS	Preset downloading with Dealer Service Tool possible
EX	Expand 14:9 (via RC SCREEN MODE button)
HO	Hospitality Mode
IM	Incredible Picture (when YUV panel is present) or Contrast Plus (no YUV panel present) item in FEATURE menu
IP	YUV panel present
PI	PIP (MC44462) or DW (SAB9081) present
PL	Parental Lock (only in NTSC sets)
PS	PIP Surf
PT	2nd PIP Tuner (when ON, the CF options should also be ON)
SC	Smart Clock / Timer
SR	Incredible Surround sound
VS	Vertical Sync slicing level; NTSC: always ON; PAL-MULTI: always OFF
W1	ECO PIP Double Window 4:3 mode (only in Pal/Multi sets in combination with PI=ON)
W2	ECO PIP Double Window 16:9 mode (only in Pal/ Multi sets in combination with PI=ON)

S0,S1,S2 Number of AV sources (see below)

Table 8-2

S0	S1	S2	REAR	SIDE
OFF	OFF	OFF	SVHS1/ AV1	AV2
OFF	ON	ON	SVHS1/ AV1	SVHS2/ AV2
ON	ON	ON	SVHS1/ AV1 AV2	SVHS2/ AV3

SA, SBSound decoding system (see below)

Table 8-3

SA	SB	Sound	ICStereo
ON/OFF	ON	MSP3400C	2CS only
ON	OFF	MSP3410D	2CS and Nicam
OFF	ON/OFF	MSP3410D	2CS only

8.5.2 Option bits/bytes

Option bits (Pal/Multi sets)
OB1 bits 8, 7, ..., 1: AK, AN, AV, BM, DN, DS, CM, CS

OB2 bits 8, 7, ..., 1: EX, HO, IP, PI, CL, PS, PT, SA

OB3 bits 8, 7, ..., 1: SB, S0, S1, S2, SC, SR, W1, W2

OB4 bits 8, 7, ..., 1: CF, IM, VS, CH(/43 & /57), (res), (res), (res), (res)

OB5 bits 8, 7, ..., 1: (reserved)

OB6 bits 8, 7, ..., 1: (reserved)

OB7 bits 8, 7, ..., 1: (reserved)

Option bits (NTSC sets)
OB1 bits 8, 7, ..., 1: AK, AN, BM, DS, CM, CS, DN, EX

OB2 bits 8, 7, ..., 1: HO, IP, PI, PL, PS, PT, S0, S1

OB3 bits 8, 7, ..., 1: S2, SR, IM, VS, CF, SA(/61), SB(/61), (res)

OB4 bits 8, 7, ..., 1: (reserved)

OB5 bits 8, 7, ..., 1: (reserved)

OB6 bits 8, 7, ..., 1: (reserved)

OB7 bits 8, 7, ..., 1: (reserved)

An option byte value is calculated in the following way:

- value "option bit 1" x 1 =.....
- value "option bit 2" x 2 =.....
- value "option bit 3" x 4 =.....
- value "option bit 4" x 8 =.....
- value "option bit 5" x 16 =.....
- value "option bit 6" x 32 =.....
- value "option bit 7" x 64 =.....
- value "option bit 8" x 128 =.....+
- value "option byte" =.....

9 Circuit description

9.1 Training Manual

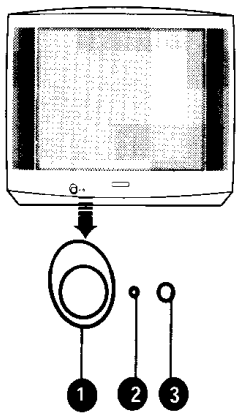
The A8 circuitry is described in detail in the A8 Training Manual. In the Training Manual, the following topics are covered:

1. Introduction
2. Mechanical
3. Control
4. Power supply
5. Video processing
6. Synchronisation
7. Audio processing
8. Audio output stage
9. Horizontal Deflection
10. Vertical Deflection
11. Teletext and on screen display
12. Wide screen view modes

The order code of the A8 Training Manual is 4822 727 21613.

FUNCTIONS OF TV CONTROLS/SOCKETS

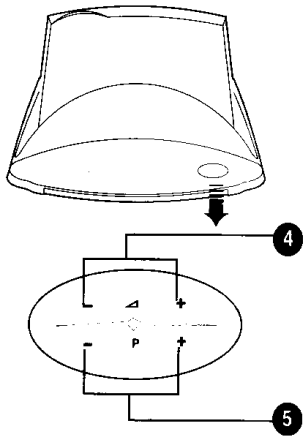
3



1 Mains Power button
Switch mains power on or off.

2 Standby light indicator
Indicate red light when standby mode is activated.

3 Remote Sensor
Aim remote control handset at remote sensor when operating the TV.

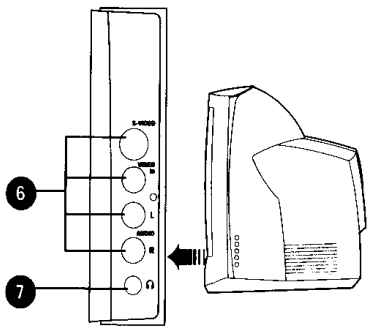


4 Volume +/ - button
Adjust sound volume louder/softer.

5 P (Programme) + / - button
Select channel in ascending/descending order.

Note

- You can enter the main menu by pressing **both** the **Volume + / -** buttons at the same time.
- Press **Programme + / -** button to select sub-menu.
- Press **Volume + / -** button to activate sub-menu.

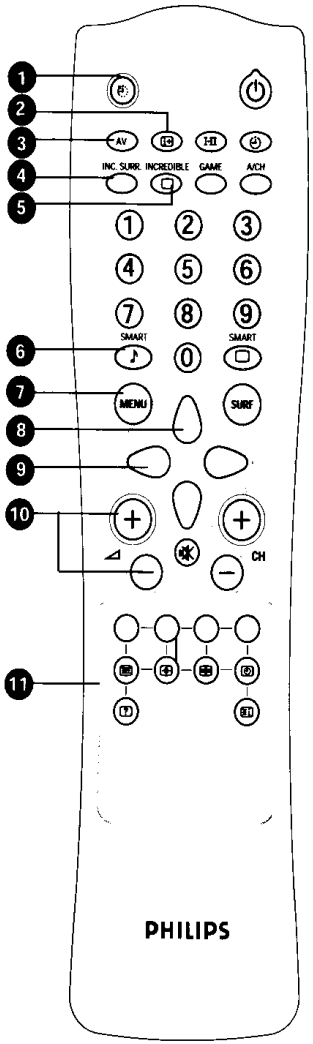


6 AV in sockets
Connect to VIDEO out and AUDIO out sockets of VCR/laser disc player.

7 Headphone socket
Connect headphone jack to socket for personal listening.

FUNCTIONS OF REMOTE CONTROL

4



1 SLEEPTIMER
Allows you to select a time period after which the set will switch to standby mode automatically. You can set the timer in steps of 15 minutes from OFF mode up to a maximum of 120 minutes.

2 OSD (On-Screen Display)
Displays :

- channel number.
- remaining time of the sleeptimer.
- programme name.
- information line
- transmission mode.

3 AV
Selects S-VID1, AV1, AV2, S-VID3, AV3 and the last viewed channel respectively.

4 INCREDIBLE SURROUND
Allows you to select incredible surround sound whentransmission is in stereo mode.

5 INCREDIBLE PICTURE
Allows you to view a more vivid and realistic picture with better contrast when the "ON" function is selected.

6 SMART SOUND
Allows you to select 4 types of sound settings

7 MENU
Allows you to adjust picture and sound settings and activate the features and install the channels automatically.

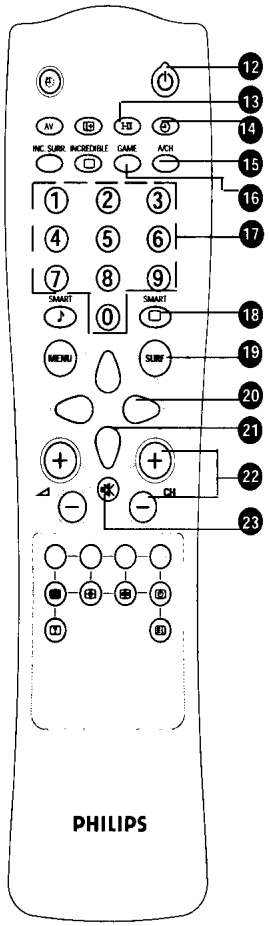
8 CURSOR UP
Allows you to select the sub-menus.

9 CURSOR LEFT
Allows you to access or adjust the sub-menus.

10 VOLUME + /-
Increases/Decreases volume.

11 TELEXTEXT
Allows you to select teletext information.

FUNCTIONS OF REMOTE CONTROL 5



12 STANDBY
Switch set off temporarily to standby mode. (The red light indicator lights up when set is on standby mode). To switch on set from standby mode, press and hold button for a few seconds.

13 I-II
Allows you to switch from Stereo to Mono sound (stereo transmission) or to choose between language I and language II.

14 TIMER
Not applicable.

15 A/CH
Alternates between last viewed channel and present channel.

16 GAME
Allows you to select Video mode as input for video games.

17 DIGIT (0 - 9)
Allows you select a channel. For a 2- digit channel number, the second digit must be entered before the " - " sign disappears

18 SMART PICTURE
Allows you to select 4 types of picture settings.

19 SURF
Allows you to select up to a maximum of 10 channels and view quickly the selected channels.

20 CURSOR RIGHT
Allows you to access or adjust the sub-menus.

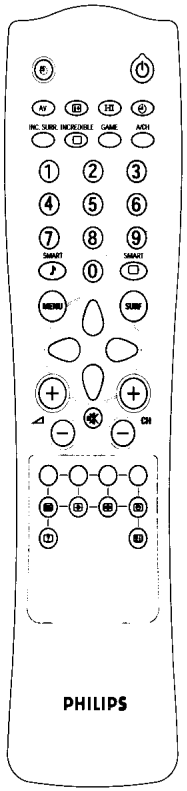
21 CURSOR DOWN
Allows you to select the sub-menus.

22 CHANNEL + / -
Allows you to select channel in ascending or descending order.

23 MUTE
Mutes sound. To restore sound, press button again.

LANGUAGE SELECTION / AUTOMATIC TUNING OF TV CHANNELS 7

How to tune in the channels automatically (Auto Store)

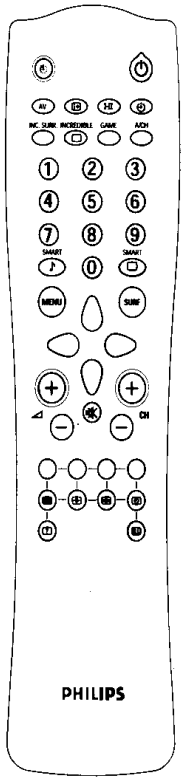


Press button	Result on TV Screen
MENU — Enter main menu.	▸PICTURE BRIGHTNESS ▪ SOUND COLOUR ▪ FEATURES CONTRAST ▪ INSTALL SHARPNESS COLOUR TEMP
Press button repeatedly until **INSTALL** is selected.	▪ PICTURE ▪ SOUND LANGUAGE ▪ FEATURES AUTO STORE ▸INSTALL MANUAL STORE SORT CHANNEL EDIT
Enter install menu.	▪ INSTALL ▸ LANGUAGE ENGLISH ▪ AUTO STORE B. MELAYU ▪ MANUAL STORE ▪ SORT ▪ CHANNEL EDIT
Enter language mode.	▪ INSTALL ▪ LANGUAGE ▸ ENGLISH ▪ AUTO STORE B. MELAYU ▪ MANUAL STORE ▪ SORT ▪ CHANNEL EDIT
Select desired language – **ENGLISH, B.MELAYU** or 中文. **OR**	▪ INSTALL ▪ LANGUAGE ▸ AUTO STORE ▪ MANUAL STORE ▪ SORT ▪ CHANNEL EDIT
Go back to language mode.	
Select **AUTO STORE**.	
Start automatic tuning. Note : To interrupt tuning, press **MENU** button.	▪ INSTALL ▪ AUTO STORE ▪ SEARCHING ▪ PLEASE WAIT ▪ CHAN. FOUND 8
	▪ INSTALL ▪ LANGUAGE ▸ AUTO STORE ▪ MANUAL STORE ▪ SORT ▪ CHANNEL EDIT
i+ — Exit menu from screen.	

MANUAL TUNING OF TV CHANNELS 8

How to tune in the channels manually (Manual Store)

Manual tuning of channels allows you to select your preferred programme number for every available programme.



Press button

MENU — Enter main menu

Press button repeatedly until **INSTALL** is selected.

Enter **INSTALL** menu

Press button repeatedly until **MANUAL STORE** is selected.

Enter **MANUAL STORE** menu. Press ◯ button again to enter **SYSTEM** mode.

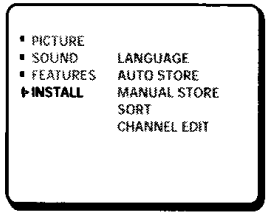
OR

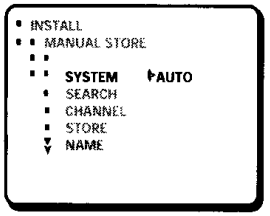
Select the respective transmission – **AUTO**, **NTSC -M, SECAM-DK, PAL -DK, PAL -I** or **PAL-BG**. **Note** : If **AUTO** is selected, the respective colour system will be automatically selected according to the transmission system.

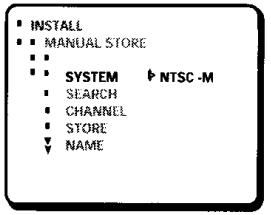
Go back to **MANUAL STORE.** menu

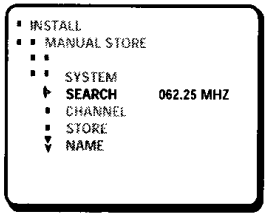
Highlight **SEARCH**.

Result on TV Screen

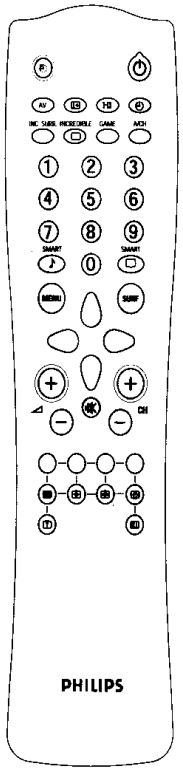








..... MANUAL TUNING OF TV CHANNELS 9



Press button

Enter **MANUAL STORE** menu.

Enter **MANUAL STORE** mode.

Start searching for the next transmitting channel. Searching stops once a transmitting channel is found.

OR

Go back to **MANUAL STORE** menu.

Highlight **CHANNEL**.

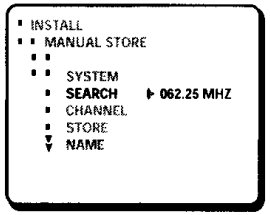
Key in the desired channel number.

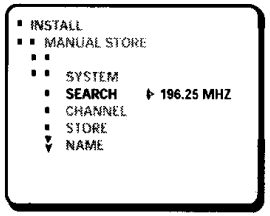
Highlight **STORE**.

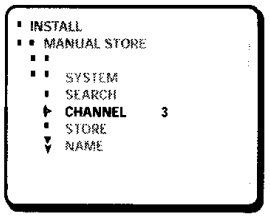
Store tuned channel. To continue searching for the next transmitting channel, repeat all the above steps.

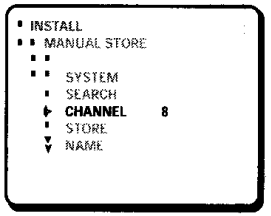
Exit menu from screen.

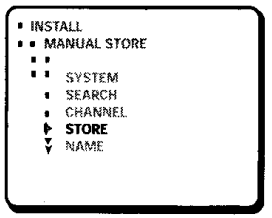
Result on TV Screen

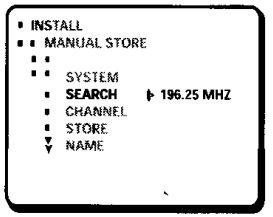








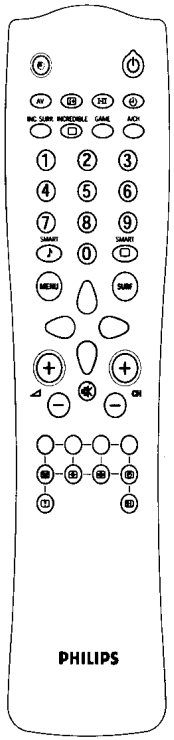




FINE TUNING OF TV CHANNELS 10

How to do fine tuning

This feature allows you to adjust the picture reception in area of weak reception.



Press Button	Result on TV Screen
Select the channel you want to fine-tune.	8
MENU — Enter main menu.	▪ PICTURE ▪ SOUND LANGUAGE ▪ FEATURES AUTO STORE ▸INSTALL MANUAL STORE SORT CHANNEL EDIT
Press button repeatedly until **INSTALL** is selected.	
Enter **INSTALL** menu.	▪ INSTALL ▪ LANGUAGE ▪ AUTO STORE SYSTEM ▸MANUAL STORE SEARCH ▪ SORT CHANNEL ▪ CHANNEL EDIT STORE
Press button repeatedly until **MANUAL STORE** is selected.	
Enter **MANUAL STORE** menu .	▪ INSTALL ▪ MANUAL STORE ▪ CHANNEL ▪ STORE ▪ NAME ▸ FINE TUNE
Press button repeatedly until **FINE TUNE** is selected.	
Start fine-tuning until desired picture and sound is obtained.	
Press button repeatedly until **STORE** is selected.	▪ INSTALL ▪ MANUAL STORE ▪ SEARCH ▪ CHANNEL ▸ STORE ▾ NAME
Store last fine-tuned status.	▪ INSTALL ▪ MANUAL STORE ▪ SYSTEM ▸ SEARCH ▸ 224.25 MHZ ▪ CHANNEL ▾ STORE
Exit menu from screen.	

PICTURE AND SOUND ADJUSTMENTS 15

The picture and sound menu allows you to make adjustments to the picture and volume level.

1. Press (MENU) **(MENU)** button to enter main menu.
2. Use the ∧ **(CURSOR UP)** or ∨ **(DOWN)** buttons to select the **PICTURE** or **SOUND** menu and the < **(CURSOR LEFT)** or > **(RIGHT)** buttons to make adjustments or access the sub-menus.
3. Press (OSD) **(OSD)** button to exit all menus from screen.

Picture menu item	Selection
Brightness	Increase/decrease level
Colour	Increase/decrease intensity
Contrast	Increase/decrease level
Sharpness	Increase/decrease level
Colour temp	Choice of 3 colour tones

÷

▪ PICTURE
▪ 38 **BRIGHTNESS**
▪ COLOUR
▪ CONTRAST
▪ SHARPNESS
▪ COLOUR TEMP

Sound menu item	Selection
Treble	Increase/decrease level
Bass	Increase/decrease intensity
Balance	Increase/decrease level
* AVL	Refer to section on AVL

÷

▪ SOUND
▪ 28 **TREBLE**
▪ BASS
▪ BALANCE
▪ AVL

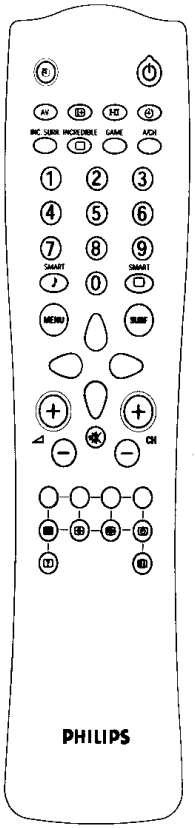
* AVL (Auto Volume Leveller)

Auto Volume leveller adjusts volume level automatically to a standard level when you experience sudden change in volume during commercial break or channel switching due to the variation in signal conditions.

FEATURES (LOCK FEATURE) 16

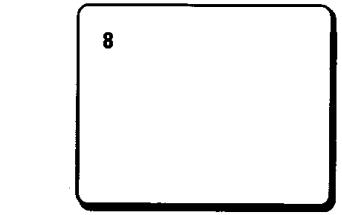
The **FEATURES** menu allows you access to the **LOCK**, **MESSAGE** and **DNR** (Dynamic Noise Reduction) features.
LOCK feature allows you to lock all channels except for one selected channel. When **"ON"** mode is selected in the **LOCK** menu, the TV can only be switched on with the remote control. The **P (Programme) + / -** buttons on top of the TV cannot be used to select a TV channel. The remote control must be kept out of reach to prevent any unauthorised use of your TV.

How to use the Lock feature

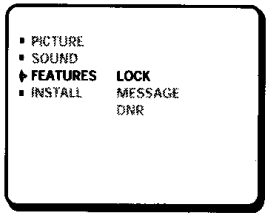


Press button

Select channel that you want to view.

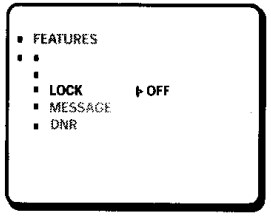


MENU Enter main menu .



Press button repeatedly until **FEATURES** is selected.

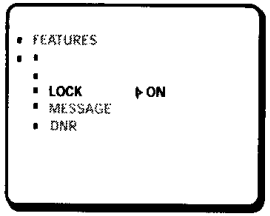
Enter **FEATURES** menu and press button again to enter **LOCK** mode.



Select **ON mode** to lock channels.

OR

Note : To unlock channels, select **OFF** mode. Ensure you do not lose your remote control as you can **ONLY** unlock all the channels through the remote control.

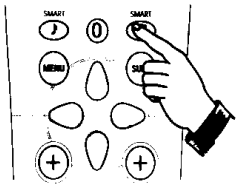


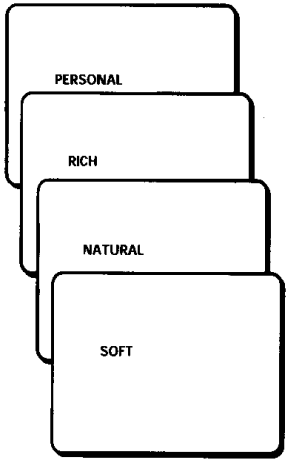
Exit menu from screen.

SMART CONTROLS 20

Smart Picture

Smart Picture offers you a choice of 4 picture settings - **PERSONAL**, **RICH**, **NATURAL** and **SOFT**.





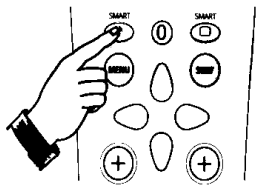
- Press **SMART** (Picture) button repeatedly to cycle through the 4 settings to select your desired mode.

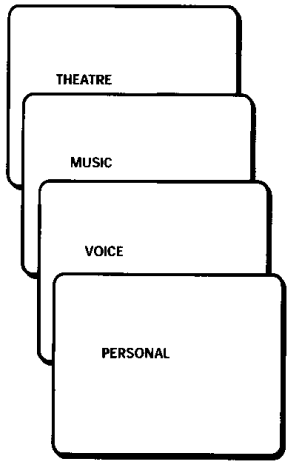
Definition of Picture Settings

PERSONAL : Picture settings are set to your preference.
RICH : Emphasize very vibrant colours. (Suitable for AV mode in brightly-lit room)
NATURAL : Emphasize original colours.
SOFT : Emphasize "warm" colours. (Suitable for dimly-lit room condition and gives cinema-like effect when light is switched off)

Smart Sound

Smart Sound offers you a choice of 4 settings - **THEATRE**, **MUSIC**, **VOICE** and **NORMAL**.





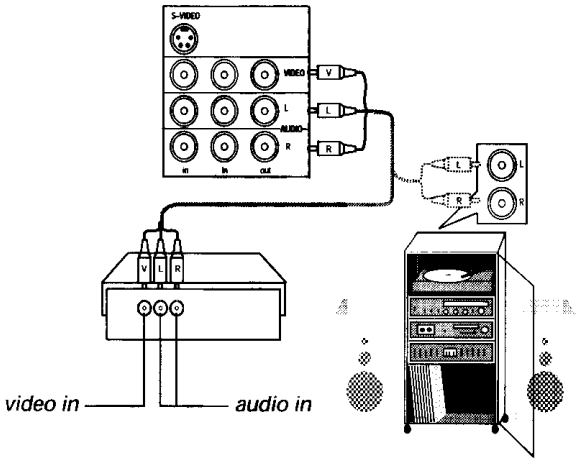
- Press **SMART** (Sound) button repeatedly to cycle through the 4 settings to select your desired mode.

Definition of Sound Settings

THEATRE : Emphasize sensation to action. (Bass and Treble boosted)
MUSIC : Emphasize low tone. (Bass boosted)
VOICE : Emphasize high tone. (Treble boosted)
PERSONAL : Sound settings are set to your preference.

Recording programmes from TV to VCR

- Connect your equipment to the sockets at **VIDEO out**. To enhance the sound of your television, connect the **AUDIO L** and **R** sockets to an external amplifier instead of to the video cassette recorder. For mono equipment, connect only the **AUDIO L** (left) socket.

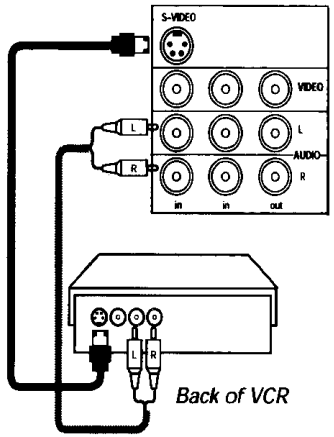


Back of VCR *External amplifier*

Playback programmes from VCR to TV

- Connect the **S-VIDEO in** socket from the television to the **Output** socket (if available) of the VCR to enhance the picture quality.

- Connect **AUDIO L** and **R in** sockets to the **Output** sockets of the VCR to playback programmes.



Back of VCR

Safety

Disconnect mains plug when :

- the RED light below the screen is flashing continuously and the TV cannot be switched on.
- a bright white line is displayed across the screen.
- cleaning the TV screen. Never use abrasive cleaning agents. Use a slight damp chamois leather.
- there is a lightning storm.
- the set is left unattended for an extended period of time.

Caution : Never attempt to repair a defective TV yourself. Always consult a skilled service personnel.

Switch off your TV overnight via the POWER ON/OFF button instead of leaving it on standby. You save energy and at the same time demagnetise the picture tube. A demagnetised picture tube supports good picture quality. When the set is switched on, do not shift, move or turn (e.g. on a swivel base) the set around because an uneveness in colour in some parts of the screen may occur.This can be eliminated by switching off the set by the mains power button . Wait for 20 minutes before switching on again. If symptom still exists, call service.

Before calling service

Symptom	Check/Action
Colour patch (uneveness)	• Switch off TV by the mains power button. Wait for 20 minutes before switching on again.
No power	• Check TV's AC power cord is plugged into mains socket. If there is still no power, disconnect plug. Wait for 60 seconds and re-insert plug. Switch on TV again.
No picture	• Check antenna connection at rear of the TV. • Possible faulty TV station. Try another channel. • Increase the contrast setting first and then the brightness setting.
Good picture but no sound	• Try increasing the volume. • Check whether sound is switched on.
Good sound but poor or abnormal colour or no picture	• Increase the contrast setting first and then the brightness setting.
Snowish picture and noise	• Check antenna connection at rear of the TV.
Horizontal dotted lines	• Possible electrical interference(e.g. hairdryer, nearby neon lights, etc). Switch off equipment.
'Ghosts' or double image	• Possible poor positioning of antenna. Using a highly directional antenna may improve reception.
TV not responding to remote control handset	• Check life span of batteries. • Aim remote control handset directly at remote control sensor lens on the TV set.

11 List of Abbreviations

List of abbreviations

+13V	+13V derived from LOT. It also used for disable the +5V supply
+13V_+20V	+13V or +20V (picture tube dependent) supply derived from the LOT to the vertical deflection output stage
+13V_SCAVEM	+13V supply for the SCAVEM circuit in the CRT panel
+14V	+14V for the RGB kill circuit
+15V	+15V power supply for sound output stage
+200V	+180V supply voltage for the RGB amplifier
+33V	+33V for tuning voltage, derived from VBAT
+5V	+5V power supply for small signal circuit
+5V_STBY	+5V standby voltage
+5VA	Derived from +5V via 5100
+5VD	Derived from +5V_STBY via 5090
+5VSOUND	Derived from +5V via 5430
+8V	+8V power supply for small signal circuit
+8VA	Derived from +8V via 3250
+8VB	Derived from +8V via 3162
+8VSOUND	+8V source regulated from +13V
-13V	-13V supply to the vertical deflection output stage
50/60Hz	50 Hz or 60 Hz switching signal from DW panel
AMP_MUTE1	Switching signal for muting sound amplifier circuitry
B_IN	Blue insert signal TDA8844
B_TXT_OSD	Blue signal for teletext or on-screen display
B_Y_IN	B-Y input signal to TDA8844
B_Y_OUT	B-Y output signal from TDA8844
BASEBAND_AUDIO	Baseband audio out signal (BTSC & mono set)
C_EXT	External chrominance signal
C_FRNT	External chrominance signal from Side AV
C_REAR	External chrominance signal from IO rear
CU1/2/3	Copper track 1, 2 or 3. Not meaningful to service
CVBS+SIF_MAIN	Main composite video baseband signal plus sound IF signal
CVBS_INT	Internal source composite baseband signal
CVBS_MON	Composite video baseband signal for monitor (WYSIWYG)
CVBS_PIP	Composite Video Baseband Signal for PIP
CVBS_PIP_EXT	External source of Composite Video Baseband Signal for PIP from rear IO
CVBS_PIP_FRNT	External source of Composite Video Baseband Signal for PIP from Side AV
D1	Connection of anode of 6621 to the modulating diode of EW panel
D2_P1	Connection of anode of "Mannheim-effect" diode 6626 and the bridge coil on EW panel
DEGAUS	Degaussing switching signal
E_W_DRIVE	East West Drive signal for EW panel
EHT_INFO	EHT info related to the beam current
EXT_R/L	Left/right audio external source to TDA9855 (BTSC)
FBL_TXT_OSD	Fast blanking signal for teletext or on-screen display
FBL1/2	Fast blanking signals for contrast reduction OSD
FF	Filament supply voltage
FRNT_CNTRL	Top control button signal
G_IN	Green insert signal to TDA8844
G_TXT_OSD	Green signal for teletext or on-screen display
GND_LOT	Return path of filament current
H_DRIVE	Horizontal drive signal
H_NEG	Inverted Horizontal signal
HFB	Horizontal flyback signal
IF1	Intermediate frequency from tuner
L/R_AUDIO_IN	Left/Right audio input for sound amplifier
L/R_FRNT	Left/Right external audio source from side-AV
L/R_HP_IN	Left/Right audio input for headphone buffer
L/R_HP_OUT	Left/Right audio output for headphone
L/R_INCRED_IN	Left/Right audio input for incredible sound processing
L/R_MON	Left/Right audio output for the monitor (WYSIWYG)
LED	LED driving signal
MUTE	MUTE switching signal for sub woofer
P2	Together with D2_P1 connection form a parallel network (of resistor & capacitor) across the S-correction capacitor of 2624. This is used on widescreen set
PAN_SWITCH	Panorama switching signal from uP
PHASE_CORRECTION	Horizontal phase correction signal for the BIMOS
PHASE_CORRECTION	Horizontal phase correction signal from line output stage
POR	Power On Reset signal for uP
POSNEG_QSS	Positive or Negative modulation of Quasi-Split Sound
PROT_E_W_VERT	Protection switching signal to the uP. It is connected with 3 protection circuits of EW protection, vertical protection and x-ray protection
PROT_IBEAM_EHT_INFO	High beam current protection switching signal to the BIMOS pin 50
R_IN	Red insert signal to TDA8844
R_TXT_OSD	Red signal for teletext or on-screen display
R_Y_IN	R-Y input signal to TDA8844
R_Y_OUT	R-Y output signal from TDA8844
RC5	RC5 signal from infer-red receiver
REAR1_L	Left audio source from rear input cinch 1
REAR1_R	Right audio source from rear input cinch 1
REAR2_L	Left audio source from rear input cinch 2
REAR2_R	Right audio source from rear input cinch 2
RGB_KILL	Red, Green and Blue suppression of main picture signal
RGB_SW_OFF	RGB switch off DC voltage to the RGB amplifier. It only works during switching off the TV set
S_GND	Sound grounding for output stage
SCL	I2C clock line
SDA	I2C data line
SEL_IF_TRAP_MAIN	Switching signal to suppress 34.4 MHz on PAL/multi set and to select 4.5 MHz sound trap
SEL_INCRED	Incredible sound on/off switching signal
SEL_MAIN_FRNT_RR	AP-NTSC SOUND: Switching signal of external sound source from rear I/O or side AV; AP-PAL/MULTI:Switching signal of external Y/CVBS source from rear I/O or side AV
SEL_MAIN_R1R2	AP-NTCS SOUND: Switching signal of external sound source from cinch 1 or 2
SEL_PIP_FRNT_RR	Selection signal of PIP external source from rear I/O or side AV
SEL_PIP_R1R2	Switching signal of PIP external source from cinch 1 or 2
SEL_TUNER1_2	Switching signal between main tuner or PIP 2nd tuner
SOUND_IF	Sound Intermediate Frequency
STAT_HP	Status signal from headphone socket
SVHS_MODE	Switching signal to YC adder circuit
SW_AUDIO_IN	Sub woofer audio input
SYS1	System selection for PAL/M/BG/N or NTSC-M
SYS2	System selection for PAL/M/BG/N or NTSC-M
V	Vertical reference signal for OSD
V_NEG	Inverted Vertical signal
VBAT	+140V power supply for line output stage
VBAT_2 = VBAT	+140V derive from VBAT
VDRIVE_NEG	Negative vertical drive signal from BIMOS pin 47

11 List of Abbreviations

VDRIVE_POS	Positive vertical drive signal from BIMOS pin 46
Y_CVBS_EXT	External Luminance or composite video baseband signal
Y_CVBS_FRNT	External Luminance or composite video baseband signal from Side AV
Y_CVBS_MON	Monitor out signal of luminance or composite video baseband signal
Y_CVBS_REAR	External composite video baseband signal or luminance signal source from rear IO
Y_IN	Luminance input signal from TDA8844
Y_OUT	Luminance output signal from TDA8844

chassis [A]

Various

0132Δ	4822 276 13603	Mains switch
0148Δ	4822 402 11116	Heatsink bracket
0151	4822 256 10336	LED holder
0200	4822 267 10933	7P Male
0205Δ	4822 267 10888	5P Male
0206Δ	4822 267 10889	6P Male
0208Δ	4822 267 10888	5P Male
0210	4822 267 10891	6P Male
0212Δ	4822 267 10888	5P Male
0222	4822 267 31673	Headphone plug
0223Δ	4822 267 10892	4P Male
0224	4822 267 10928	5P Male
0233	4822 255 70281	NTC holder
0245Δ	4822 267 10775	2P Male (black)
0246Δ	4822 265 20723	2P conn. BM vert.
0247Δ	4822 267 10892	4P Male
0248	4822 267 10929	5P Female
0249	4822 267 10929	5P Female
0284	4822 267 10931	7P Male
0293Δ	4822 267 10889	6P Male
0317Δ	4822 532 61201	Spacer (EHT cable)
1081	4822 242 10694	crystal 12MHz
1085	4822 218 11573	remote control GP1U28QP
1125Δ	4822 210 10823	tuner UV IEC TELE9-087A
1125Δ	4822 210 10826	tuner UV CHI IEC TELE9-108A
1125Δ	4822 210 10827	tuner UV PH TELE9-088A
1125Δ	4822 210 10828	tuner UV PH TELH9-206A
1125Δ	4822 210 10829	tuner UV CHI PH TELE9-106A
1125Δ	4822 210 10837	tuner UV F TELH9-205A
1145	4822 242 10357	SAW flt. OFWK2960M
1145	4822 242 10783	SAW flt. OFWK3955M
1145	4822 242 10874	SAW flt. OFWM1967M
1145	4822 242 81637	SAW flt. OFWG3952M
1145	4822 242 81964	SAW flt. OFWG1984M
1158	4822 242 10363	cer. flt. 4.5MHz SFSH
1165	4822 242 81978	cer. flt. 4.5MHz TPS
1167	4822 242 10315	cer. flt. 5.5/5.7/ 6.5MHz TPT
1167	4822 242 81712	cer. flt. TPWA04B
1168	4822 242 81572	cer. flt. TPS6
1168	4822 242 81978	cer. flt. 4.5MHz TPS
1189	4822 242 10695	cr. 4.433619 MHz
1190	4822 242 10776	cr. 3.579545 MHz
1430	4822 242 10769	crystal 18.432 MHz
1431	4822 242 10359	cer. res. 514.5KHz
1901Δ	4822 280 10367	relay
1905Δ	4822 071 51602	Fuse 1.6A
1906Δ	4822 071 51602	Fuse 1.6A
1906Δ	4822 071 52502	Fuse 2.5A
1910Δ	4822 071 51002	Fuse 1A

⊣⊢

2032Δ	5322 122 34123	1nF 10% 50V
2040Δ	5322 122 34123	1nF 10% 50V
2052	4822 126 13482	470nF 16V
2054Δ	4822 126 10002	100nF 20% 25V
2055Δ	4822 126 10002	100nF 20% 25V
2060	5322 122 32531	100pF 5% 50V
2061	5322 122 32531	100pF 5% 50V
2062	5322 122 32531	100pF 5% 50V
2063	4822 126 13692	47pF 1% 63V
2070Δ	4822 126 10002	100nF 20% 25V
2070	4822 126 13473	220nF 50V
2071	4822 126 13473	220nF 50V
2072	4822 126 13473	220nF 50V
2073	5322 122 32658	22pF 5% 50V
2074	5322 122 32658	22pF 5% 50V
2075	5322 122 32531	100pF 5% 50V
2077Δ	4822 122 32627	2.7nF 10% 50V
2078	4822 124 81029	100µF 20% 25V
2080	5322 122 32531	100pF 5% 50V
2082	4822 126 13473	220nF 50V
2084	5322 122 32531	100pF 5% 50V
2085	4822 126 13689	18pF 1% 63V
2086	4822 126 13689	18pF 1% 63V
2093Δ	4822 124 40433	47µF 20% 25V
2094	4822 126 13473	220nF 50V
2125	4822 124 81029	100µF 20% 25V
2126	4822 124 81029	100µF 20% 25V
2127Δ	4822 126 12944	47nF 10% 50V
2144Δ	4822 122 33177	10nF 20% 50V
2145Δ	4822 122 33177	10nF 20% 50V
2146Δ	4822 122 33177	10nF 20% 50V
2147	5322 122 33861	120pF 10% 50V
2148	4822 122 32139	12pF 2% 63V
2149Δ	4822 122 33177	10nF 20% 50V
2153Δ	5322 122 32654	22nF 10% 63V
2154	4822 124 40242	1µF 20% 63V
2155	5322 122 32659	33pF 5% 50V
2156Δ	4822 124 41579	10µF 20% 50V
2157	4822 126 14087	100nF 10% 63V
2161	5322 122 32659	33pF 5% 50V
2170	4822 124 81029	100µF 20% 25V
2171	4822 126 14087	100nF 10% 63V
2176	4822 126 13482	470nF 16V
2177	4822 126 13482	470nF 16V
2180Δ	5322 122 34123	1nF 10% 50V
2181Δ	4822 126 10002	100nF 20% 25V
2186Δ	5322 122 32654	22nF 10% 63V
2187	4822 124 41576	2.2µF 20% 50V
2188	4822 126 13473	220nF 50V
2189	4822 126 13689	18pF 1% 63V
2190	4822 126 13689	18pF 1% 63V
2196Δ	5322 122 34123	1nF 10% 50V
2197Δ	4822 126 10002	100nF 20% 25V
2241	4822 126 13482	470nF 16V
2247	4822 126 13473	220nF 50V
2248	4822 126 13473	220nF 50V
2250	4822 124 81029	100µF 20% 25V
2251Δ	5322 122 32654	22nF 10% 63V
2259	4822 126 13473	220nF 50V
2261Δ	5322 122 32654	22nF 10% 63V
2263Δ	5322 122 32654	22nF 10% 63V
2266	4822 126 13482	470nF 16V
2267	4822 126 13482	470nF 16V
2292Δ	4822 126 12944	47nF 10% 50V
2293Δ	4822 126 12944	47nF 10% 50V
2294Δ	4822 126 12944	47nF 10% 50V
2322Δ	4822 124 40246	4.7µF 20% 63V
2322Δ	4822 124 41579	10µF 20% 50V
2323	4822 124 40242	1µF 20% 63V
2430	5322 122 31866	6.8nF 10% 63V
2431	4822 126 12105	33nF 5% 63V
2432Δ	4822 126 10002	100nF 20% 25V
2433	4822 126 13482	470nF 16V
2434Δ	4822 122 33177	10nF 20% 50V
2435	4822 124 41576	2.2µF 20% 50V
2436	4822 124 81029	100µF 20% 25V
2437	4822 126 13473	220nF 50V
2438	4822 126 13482	470nF 16V
2439	4822 124 22263	220µF 20% 25V
2440Δ	4822 124 41579	10µF 20% 50V
2441	4822 126 13482	470nF 16V
2442Δ	4822 124 41579	10µF 20% 50V
2443	4822 124 40242	1µF 20% 63V
2444Δ	4822 126 12944	47nF 10% 50V
2445Δ	4822 124 41579	10µF 20% 50V
2446Δ	4822 126 10002	100nF 20% 25V
2447	4822 126 13296	100nF 10% 16V
2447	5322 126 10511	1nF 5% 50V
2448Δ	4822 126 10002	100nF 20% 25V
2449Δ	4822 124 40246	4.7µF 20% 63V
2450	5322 126 10511	1nF 5% 50V
2451	5322 126 10511	1nF 5% 50V
2452Δ	4822 126 10002	100nF 20% 25V
2453Δ	4822 126 10002	100nF 20% 25V
2454Δ	4822 126 12944	47nF 10% 50V
2455Δ	4822 126 12944	47nF 10% 50V
2456	5322 122 32286	3.3pF 5% 50V
2457	5322 122 31866	6.8nF 10% 63V
2457	5322 122 32286	3.3pF 5% 50V
2458	5322 122 32331	1nF 10% 100V
2459	4822 126 12105	33nF 5% 63V
2460	4822 126 13692	47pF 1% 63V
2461Δ	4822 126 10002	100nF 20% 25V
2462Δ	4822 126 12944	47nF 10% 50V
2462	4822 126 13692	47pF 1% 63V
2463	5322 122 32269	6.8pF 5% 50V
2464	5322 122 32448	10pF 5% 50V
2464	5322 122 32658	22pF 5% 50V
2465Δ	4822 126 10002	100nF 20% 25V
2465	5322 126 10511	1nF 5% 50V
2466Δ	4822 124 40433	47µF 20% 25V
2467Δ	4822 126 10002	100nF 20% 25V
2468Δ	4822 124 41579	10µF 20% 50V
2469	4822 126 13482	470nF 80/20% 16V
2470Δ	4822 122 33177	10nF 20% 50V
2471Δ	4822 126 10002	100nF 20% 25V
2472	4822 126 13473	220nF 50V
2473	4822 126 13473	220nF 50V
2474	4822 126 13473	220nF 50V
2475	4822 122 33891	3.3nF 10% 63V
2475	4822 126 13188	15nF 5% 63V
2476	4822 122 33891	3.3nF 10% 63V
2476	4822 126 13188	15nF 5% 63V
2477Δ	4822 124 40246	4.7µF 20% 63V
2478Δ	4822 124 40246	4.7µF 20% 63V
2479	4822 126 13473	220nF 50V
2480	4822 126 13482	470nF 16V
2481	4822 126 13473	220nF 50V
2482	4822 126 13473	220nF 50V
2483	4822 122 33891	3.3nF 10% 63V
2484	4822 122 33891	3.3nF 10% 63V
2485	4822 126 13473	220nF 50V
2486Δ	4822 124 40246	4.7µF 20% 63V
2487Δ	4822 124 41579	10µF 20% 50V
2488	4822 122 33532	3.3nF 5% 50V
2489	4822 122 33532	3.3nF 5% 50V
2490	4822 126 13482	470nF 16V
2491Δ	4822 126 10002	100nF 20% 25V
2492Δ	4822 124 40246	4.7µF 20% 63V
2493	4822 124 81029	100µF 20% 25V
2494Δ	4822 124 41579	10µF 20% 50V
2495Δ	4822 126 10002	100nF 20% 25V
2495	5322 122 32531	100pF 5% 50V
2496Δ	4822 124 41579	10µF 20% 50V
2497	5322 126 10511	1nF 5% 50V
2498	5322 126 10511	1nF 5% 50V
2499	5322 126 10511	1nF 5% 50V
2500	5322 126 10511	1nF 5% 50V
2501	4822 126 13473	220nF 50V
2502	4822 126 13473	220nF 50V
2503	4822 126 13473	220nF 50V
2504	4822 126 13473	220nF 50V
2505	5322 126 10511	1nF 5% 50V
2506Δ	4822 126 10002	100nF 20% 25V
2507	4822 126 13482	470nF 16V
2508	4822 126 13482	470nF 16V
2509Δ	4822 126 10002	100nF 20% 25V
2511Δ	4822 126 10002	100nF 20% 25V
2520Δ	4822 124 41579	10µF 20% 50V
2521	4822 126 13473	220nF 80-20% 50V
2522	4822 126 13473	220nF 80-20% 50V
2550Δ	4822 126 10002	100nF 20% 25V
2551Δ	4822 126 10002	100nF 20% 25V
2552Δ	4822 126 10002	100nF 20% 25V
2553Δ	4822 124 40433	47µF 20% 25V
2555Δ	5322 122 34123	1nF 10% 50V
2556Δ	5322 122 34123	1nF 10% 50V
2558	4822 126 13482	470nF 16V
2559	4822 126 13482	470nF 16V
2560	4822 126 13482	470nF 16V
2561	4822 126 13482	470nF 16V
2562	4822 126 13482	470nF 16V
2565Δ	5322 122 32654	22nF 10% 63V
2566Δ	5322 122 32654	22nF 10% 63V
2567Δ	4822 126 10002	100nF 20% 25V
2568Δ	4822 126 10002	100nF 20% 25V
2569	4822 126 13482	470nF 16V
2570	4822 126 13482	470nF 16V
2571Δ	4822 124 40433	47µF 20% 25V
2572Δ	4822 124 40433	47µF 20% 25V
2600	4822 124 11572	47µF 20% 160V
2601	4822 122 31177	470pF 10% 500V
2602Δ	5322 126 10223	4.7nF 10% 63V
2605	4822 122 31175	1nF 10% 500V
2611	4822 121 43526	47nF 5% 250V
2611	4822 121 51399	47nF 10% 50V
2612	4822 121 43526	47nF 5% 250V
2612	4822 121 51399	47nF 10% 50V
2618Δ	4822 126 12239	560pF 10% 2KV
2618Δ	4822 126 13451	2.2nF 10% 2KV
2621	4822 122 31177	470pF 10% 500V
2624	4822 124 41741	2.2µF 20% 350V
2624	4822 124 80069	1µF 20% 160V
2625Δ	4822 121 70434	11nF 5% 1.6KV
2625Δ	4822 121 70618	12nF 5% 1600V
2627	4822 124 40255	100µF 20% 63V
2629Δ	4822 121 10781	470nF 5% 250V
2629	4822 126 14097	680nF 5% 250V
2631	5322 121 42661	330nF 5% 63V
2633Δ	4822 126 14053	1nF 10% 2KV
2633Δ	4822 126 14184	820pF 10% 2KV
2646Δ	4822 126 10002	100nF 20% 25V
2647Δ	4822 126 12944	47nF 10% 50V
2650Δ	4822 121 10619	220nF 10% 250V
2650	4822 121 40472	150nF 10% 250V
2656Δ	4822 124 11508	250V. 22µF 20%
2661Δ	4822 124 11878	4700µF 16V.
2661	4822 124 81039	3300µF 20% 25V
2662	4822 121 51305	15nF 10% 50V
2662	4822 121 70676	27P 10% 50V
2664	4822 124 80791	470µF 16V 20%
2700	5322 121 42386	100nF 5% 63V
2705	4822 122 33575	220pF 5% 50V
2709	5322 122 32268	470pF 10% 50V
2710	5322 122 32268	470pF 10% 50V
2729	4822 124 11571	1µF 20% 50V
2730	5322 121 42386	100nF 5% 63V
2731	4822 124 40255	100µF 20% 63V
2732	5322 121 42386	100nF 5% 63V
2733	4822 121 42408	220nF 5% 63V
2735	4822 124 41576	2.2µF 20% 50V
2736	5322 121 42386	100nF 5% 63V
2742	5322 121 42386	100nF 5% 63V
2743	4822 124 81029	100µF 20% 25V
2746	4822 126 13482	470nF 16V
2810Δ	4822 126 12944	47nF 10% 50V
2811	4822 122 33575	220pF 5% 50V
2812	5322 126 10511	1nF 5% 50V
2813	4822 126 13486	15pF 2% 63V
2814	4822 126 13473	220nF 50V
2815Δ	4822 126 10002	100nF 20% 25V
2816	4822 122 33175	2.2nF 20% 50V
2817Δ	5322 126 10223	4.7nF 10% 63V
2818	5322 122 32531	100pF 5% 50V
2819	4822 124 40242	1µF 20% 63V
2820	5322 126 10511	1nF 5% 50V
2821	5322 126 10511	1nF 5% 50V
2822	5322 121 42386	100nF 5% 63V
2860Δ	4822 124 41579	10µF 20% 50V
2861	5322 122 32658	22pF 5% 50V
2862	4822 126 13689	18pF 1% 63V
2863	4822 126 13486	15pF 2% 63V
2864Δ	4822 121 43823	470nF 5% 50V
2865	5322 122 32269	6.8pF 5% 50V
2866	4822 126 13482	470nF 16V
2867	4822 122 33216	270pF 5% 50V
2868	5322 122 32531	100pF 5% 50V
2869	4822 121 40334	100nF 10% 100V
2870Δ	5322 122 32654	22nF 10% 63V
2871	4822 124 40764	22µF 100 V
2872	4822 126 11308	47pF 5% 500V
2873	4822 121 40516	22nF 10% 250V
2874	4822 126 13693	56pF 1% 63V
2876Δ	4822 124 41579	10µF 20% 50V
2904Δ	4822 126 13451	2.2nF 10% 2KV
2905Δ	4822 126 13451	2.2nF 10% 2KV
2906Δ	4822 124 41748	220µF 20% 400V
2906Δ	4822 124 80568	470µF 20% 400V
2908	4822 121 70619	22nF 10% 50V
2911	4822 121 41664	22nF 10% 400V
2912	4822 124 23489	33µF 20% 25V
2912Δ	4822 124 40433	47µF 20% 25V
2913Δ	4822 126 13862	1.5nF 10% 2KV
2914	4822 121 10779	1.5nF 10% 50V
2914	4822 121 43897	1nF 5% 400V
2915	5322 122 32311	470pF 10% 100V
2916Δ	4822 126 14237	470pF 10% 2KV
2917	4822 124 11572	47µF 20% 160V
2918	4822 122 31175	1nF 10% 500V
2919	4822 124 81146	25V 1000µF PM20
2920	4822 121 41857	10nF 5% 250V
2922	4822 122 31175	1nF 10% 500V
2923	4822 124 80215	1000µF 20% 35V
2925	4822 124 81168	2200µF 20% 35V
2931Δ	4822 124 40433	47µF 20% 25V
2937	4822 124 41584	100µF 20% 10V
2938Δ	4822 124 41579	10µF 20% 50V
2940Δ	4822 126 10002	100nF 20% 25V
2950	4822 126 13061	220nF 20% 25V
2971	4822 126 11824	100pF 10% 1KV
2975	4822 121 10684	68nF 10% 50V
2986Δ	4822 126 14208	220pF 20% 250V
2987Δ	4822 126 14133	1nF 20% 250V

⊣□⊢

3001	4822 116 90885	8k2
3002	4822 116 90885	8k2
3003	4822 117 12168	2k2
3010	4822 117 10833	10k 1% 0.1W
3011	4822 117 10833	10k 1% 0.1W
3012	4822 117 10833	10k 1% 0.1W
3014	4822 117 10833	10k 1% 0.1W
3015	4822 117 10833	10k 1% 0.1W
3018	4822 051 20681	680Ω 5% 0.1W
3020	4822 050 11002	1k 1% 0.4W
3025Δ	4822 051 20101	100Ω 5% 0.1W
3027Δ	4822 051 20101	100Ω 5% 0.1W
3029Δ	4822 051 20101	100Ω 5% 0.1W
3030Δ	4822 051 20101	100Ω 5% 0.1W
3031Δ	4822 051 20101	100Ω 5% 0.1W
3032Δ	4822 051 20101	100Ω 5% 0.1W
3033Δ	4822 051 20101	100Ω 5% 0.1W
3034Δ	4822 051 20101	100Ω 5% 0.1W
3035	4822 051 10102	1k 2% 0.25W
3036	4822 051 10102	1k 2% 0.25W
3038Δ	4822 051 20101	100Ω 5% 0.1W
3039Δ	4822 051 20101	100Ω 5% 0.1W
3040	4822 051 10102	1k 2% 0.25W
3041	4822 050 11002	1k 1% 0.4W
3042	4822 116 52175	100Ω 5% 0.5W
3051	4822 116 52175	100Ω 5% 0.5W
3052	4822 116 52175	100Ω 5% 0.5W
3053	4822 050 11002	1k 1% 0.4W
3054	4822 116 52175	100Ω 5% 0.5W
3055	4822 117 10833	10k 1% 0.1W
3056	4822 117 11449	2k2 1% 0.1W
3057	4822 117 11449	2k2 1% 0.1W
3058	4822 051 20273	27k 5% 0.1W
3060	4822 117 10833	10k 1% 0.1W
3061	4822 117 10833	10k 1% 0.1W
3062	4822 117 10833	10k 1% 0.1W
3063Δ	4822 051 20472	4k7 5% 0.1W
3065	4822 117 11503	220Ω 1% 0.1W
3066	4822 117 11503	220Ω 1% 0.1W
3067	4822 117 11503	220Ω 1% 0.1W
3068	4822 051 10102	1k 2% 0.25W
3070Δ	4822 051 20471	470Ω 5% 0.1W
3071Δ	4822 051 20471	470Ω 5% 0.1W
3072Δ	4822 051 20471	470Ω 5% 0.1W
3073Δ	4822 051 20471	470Ω 5% 0.1W
3074	4822 117 10833	10k 1% 0.1W
3075	4822 116 83884	47k 5% 0.5W
3076Δ	4822 051 20472	4k7 5% 0.1W
3076	4822 117 10833	10k 1% 0.1W
3077	4822 116 83864	10k 5% 0.5W
3079Δ	4822 051 20472	4k7 5% 0.1W
3079	4822 117 10833	10k 1% 0.1W
3084	4822 116 52283	4k7 5% 0.5W
3085Δ	4822 051 20472	4k7 5% 0.1W
3086Δ	4822 051 20101	100Ω 5% 0.1W
3087Δ	4822 051 20332	3k3 5% 0.1W

3090Δ	4822 051 20101	100Ω 5% 0.1W
3091Δ	4822 051 20101	100Ω 5% 0.1W
3092Δ	4822 051 20101	100Ω 5% 0.1W
3093	4822 116 52175	100Ω 5% 0.5W
3094	4822 116 52175	100Ω 5% 0.5W
3099	4822 117 10833	10k 1% 0.1W
3126	4822 051 20392	3k9 5% 0.1W
3128Δ	4822 051 20153	15k 5% 0.1W
3129Δ	4822 051 20008	0Ω jumper
3130Δ	4822 051 20008	0Ω jumper
3131Δ	4822 051 20008	0Ω jumper
3141Δ	4822 051 20008	0Ω jumper
3142Δ	4822 051 20008	0Ω jumper
3143Δ	4822 051 20008	0Ω jumper
3145Δ	4822 051 20332	3k3 5% 0.1W
3146Δ	4822 051 20472	4k7 5% 0.1W
3149	4822 051 10102	1k 2% 0.25W
3150	4822 117 11449	2k2 1% 0.1W
3152	4822 116 52228	680Ω 5% 0.5W
3153	4822 051 20391	390Ω 5% 0.1W
3160	4822 051 10102	1k 2% 0.25W
3161	4822 051 10102	1k 2% 0.25W
3162Δ	4822 052 10338	3Ω3 5% 0.33W
3163	4822 051 20561	560Ω 5% 0.1W
3164Δ	4822 051 20121	120Ω 5% 0.1W
3166Δ	4822 051 20472	4k7 5% 0.1W
3167Δ	4822 051 20472	4k7 5% 0.1W
3168	4822 051 20561	560Ω 5% 0.1W
3169	4822 051 20561	560Ω 5% 0.1W
3170	4822 117 11449	2k2 1% 0.1W
3171Δ	4822 051 20101	100Ω 5% 0.1W
3175Δ	4822 051 20101	100Ω 5% 0.1W
3176	4822 051 20561	560Ω 5% 0.1W
3197	4822 051 20104	100k 5% 0.1W
3241	4822 051 10102	1k 2% 0.25W
3242	4822 117 11449	2k2 1% 0.1W
3243	4822 051 20474	470k 5% 0.1W
3244	4822 051 10102	1k 2% 0.25W
3245	4822 051 10102	1k 2% 0.25W
3247Δ	4822 051 20101	100Ω 5% 0.1W
3248	4822 117 10834	47k 1% 0.1W
3249	4822 117 10834	47k 1% 0.1W
3250Δ	4822 052 10109	10Ω 5% 0.33W
3251	4822 051 20104	100k 5% 0.1W
3252	4822 051 20104	100k 5% 0.1W
3253Δ	4822 051 20471	470Ω 5% 0.1W
3255Δ	4822 051 20101	100Ω 5% 0.1W
3257Δ	4822 051 20471	470Ω 5% 0.1W
3260	4822 117 10833	10k 1% 0.1W
3261	4822 117 10833	10k 1% 0.1W
3262	4822 117 11504	270Ω 1% 0.1W
3263	4822 117 11503	220Ω 1% 0.1W
3264	4822 051 10102	1k 2% 0.25W
3264Δ	4822 051 20008	0Ω jumper
3265Δ	4822 051 20471	470Ω 5% 0.1W
3266	4822 051 20474	470k 5% 0.1W
3267	4822 117 11449	2k2 1% 0.1W
3268	4822 051 10102	1k 2% 0.25W
3271	4822 117 11449	2k2 1% 0.1W
3274	4822 116 52175	100Ω 5% 0.5W
3292	4822 116 52175	100Ω 5% 0.5W
3293Δ	4822 051 20472	4k7 5% 0.1W
3303	4822 117 11449	2k2 1% 0.1W
3304	4822 117 11449	2k2 1% 0.1W
3305	4822 117 11449	2k2 1% 0.1W
3306	4822 116 52195	47Ω 5% 0.5W
3307	4822 116 52195	47Ω 5% 0.5W
3308	4822 116 52195	47Ω 5% 0.5W
3309	4822 051 20479	47Ω 5% 0.1W
3310	4822 051 20479	47Ω 5% 0.1W
3311	4822 051 20479	47Ω 5% 0.1W
3312	4822 117 10833	10k 1% 0.1W
3323	4822 116 52257	22k 5% 0.5W
3324	4822 051 20184	180k 5% 0.1W
3325	4822 051 20184	180k 5% 0.1W
3326	4822 051 20154	150k 5% 0.1W
3327Δ	4822 051 20229	22Ω 5% 0.1W
3330	4822 117 11449	2k2 1% 0.1W
3331	4822 051 20333	33k 5% 0.1W
3331	4822 117 10834	47k 1% 0.1W
3335	4822 116 52175	100Ω 5% 0.5W
3336	4822 116 52175	100Ω 5% 0.5W
3430Δ	4822 051 20101	100Ω 5% 0.1W
3431Δ	4822 051 20101	100Ω 5% 0.1W
3432	4822 117 10965	18k 1% 0.1W
3433	4822 117 11449	2k2 1% 0.1W
3434	4822 117 10353	150Ω 1% 0.1W
3435	4822 051 20822	8k2 5% 0.1W
3436	4822 051 20273	27k 5% 0.1W
3450Δ	4822 051 20332	3k3 5% 0.1W
3451	4822 117 10965	18k 1% 0.1W
3452	4822 117 11449	2k2 1% 0.1W
3453	4822 117 11449	2k2 1% 0.1W
3454Δ	4822 051 20101	100Ω 5% 0.1W
3455Δ	4822 051 20101	100Ω 5% 0.1W
3456Δ	4822 051 20101	100Ω 5% 0.1W
3457Δ	4822 051 20101	100Ω 5% 0.1W
3458	4822 051 20122	1k2 5% 0.1W
3464Δ	4822 052 10159	15Ω 5% 0.33W
3550Δ	4822 051 20101	100Ω 5% 0.1W
3551	4822 117 11383	12k 1% 0.1W
3552	4822 117 10833	10k 1% 0.1W
3559	4822 117 10833	10k 1% 0.1W
3559	4822 117 11507	6k8 1% 0.1W
3560	4822 117 10965	18k 1% 0.1W
3563Δ	4822 051 20472	4k7 5% 0.1W
3564	4822 051 20822	8k2 5% 0.1W
3565Δ	4822 051 20472	4k7 5% 0.1W
3566	4822 051 20822	8k2 5% 0.1W
3567	4822 051 20154	150k 5% 0.1W
3568	4822 051 20154	150k 5% 0.1W
3569	4822 117 10833	10k 1% 0.1W
3570	4822 117 11507	6k8 1% 0.1W
3571	4822 050 11002	1k 1% 0.4W
3572	4822 050 11002	1k 1% 0.4W
3575Δ	4822 051 20109	10Ω 5% 0.1W
3576Δ	4822 051 20109	10Ω 5% 0.1W
3601	4822 053 11159	15Ω 5% 2W
3601Δ	4822 053 11339	33Ω 5% 2W
3602	4822 116 52289	5k6 5% 0.5W
3608	4822 050 13303	33k 1% 0.4W
3608	4822 050 13903	39k 1% 0.4W
3609	4822 050 13903	39k 1% 0.4W
3610	4822 050 12203	22k 1% 0.4W
3612	4822 053 12123	12k 5% 3W
3612	4822 117 12106	6k8 5% 3W
3613Δ	4822 053 12153	15k 5% 3W
3613	4822 117 12106	6k8 5% 3W
3616	4822 117 11507	6k8 1% 0.1W
3617	4822 116 52191	33Ω 5% 0.5W
3618	4822 051 10102	1k 2% 0.25W
3628	4822 050 11002	1k 1% 0.4W
3629	4822 116 52272	330k 5% 0.5W
3630	4822 116 52228	680Ω 5% 0.5W
3631Δ	4822 053 21334	330k 5% 0.5W
3632	4822 116 52271	33k 5% 0.5W
3632	4822 116 52303	8k2 5% 0.5W
3638	4822 116 52175	100Ω 5% 0.5W
3639Δ	4822 053 10103	10k 5% 1W
3643Δ	4822 052 11108	1Ω 5% 0.5W
3645Δ	4822 052 11108	1Ω 5% 0.5W
3647	4822 116 52304	82k 5% 0.5W
3650	4822 116 83864	10k 5% 0.5W
3660Δ	4822 052 11108	1Ω 5% 0.5W
3661Δ	4822 052 11108	1Ω 5% 0.5W
3663Δ	4822 052 11108	1Ω 5% 0.5W
3664Δ	4822 052 11108	1Ω 5% 0.5W
3666	4822 116 52175	100Ω 5% 0.5W
3668	4822 116 52175	100Ω 5% 0.5W
3708	4822 050 22202	2k2 1% 0.6W
3709	4822 051 10102	1k 2% 0.25W
3710	4822 051 10102	1k 2% 0.25W
3715	4822 116 83864	10k 5% 0.5W
3716	4822 116 83864	10k 5% 0.5W
3717	4822 117 10833	10k 1% 0.1W
3718	4822 116 52283	4k7 5% 0.5W
3729	4822 116 83864	10k 5% 0.5W
3730	4822 050 22202	2k2 1% 0.6W
3731	4822 051 20104	100k 5% 0.1W
3731	4822 051 20274	270k 5% 0.1W
3732	4822 051 20104	100k 5% 0.1W
3733Δ	4822 052 10158	1Ω5 5% 0.33W
3734	4822 116 83864	10k 5% 0.5W
3735	4822 116 52175	100Ω 5% 0.5W
3736	4822 116 52175	100Ω 5% 0.5W
3737	4822 111 30819	2Ω7
3737	4822 111 31051	3Ω3 5%
3738	4822 111 30819	2Ω7
3738	4822 117 11778	4Ω7 5%
3739	4822 111 31051	3Ω3 5%
3739	4822 116 81755	2Ω2 0.25W
3740	4822 117 10833	10k 1% 0.1W
3741	4822 116 83864	10k 5% 0.5W
3744	4822 051 10102	1k 2% 0.25W
3745	4822 116 52199	68Ω 5% 0.5W
3746	4822 051 20273	27k 5% 0.1W
3747	4822 051 20223	22k 5% 0.1W
3748	4822 117 10834	47k 1% 0.1W
3749	4822 116 52175	100Ω 5% 0.5W
3800	4822 051 20333	33k 5% 0.1W
3802	4822 050 11002	1k 1% 0.4W
3803	4822 051 20105	1M 5% 0.1W
3803	4822 051 20684	680k 5% 0.1W
3804Δ	4822 051 20153	15k 5% 0.1W
3805Δ	4822 051 20472	4k7 5% 0.1W
3806	4822 051 20475	4M7 5% 0.1W
3807	4822 051 10102	1k 2% 0.25W
3808	4822 051 10102	1k 2% 0.25W
3809	4822 117 10356	39k 1% 0.1W
3810	4822 117 10833	10k 1% 0.1W
3811	4822 051 20273	27k 5% 0.1W
3812	4822 116 52283	4k7 5% 0.5W
3814Δ	4822 051 20101	100Ω 5% 0.1W
3861Δ	4822 051 20332	3k3 5% 0.1W
3862	4822 117 12955	2k7 1% 0.1W
3863	4822 117 11449	2k2 1% 0.1W
3864Δ	4822 051 20471	470Ω 5% 0.1W
3865	4822 117 10965	18k 1% 0.1W
3866	4822 117 11449	2k2 1% 0.1W
3868	4822 117 11454	820Ω 1% 0.1W
3869	4822 051 20159	15Ω 5% 0.1W
3870	4822 051 10102	1k 2% 0.25W
3871	4822 117 11148	56k 1% 0.1W
3872	4822 117 11148	56k 1% 0.1W
3873	4822 051 10102	1k 2% 0.25W
3874	4822 117 13424	8k2 5% 5W
3875Δ	4822 051 20472	4k7 5% 0.1W
3876	4822 051 20339	33Ω 5% 0.1W
3877Δ	4822 051 20101	100Ω 5% 0.1W
3880	4822 116 52176	10Ω 5% 0.5W
3881Δ	4822 051 20109	10Ω 5% 0.1W
3882	4822 116 83872	220Ω 5% 0.5W
3902	4822 117 12074	1Ω5 10%
3905	4822 116 30451	NTC
3906	4822 116 10075	9Ω 220V
3910	4822 117 10833	10k 1% 0.1W
3911	4822 117 11449	2k2 1% 0.1W
3911	4822 117 12955	2k7 1% 0.1W
3917	4822 053 12104	100k 5% 3W
3917	4822 117 13425	150k 10% 3W
3920	4822 116 52269	3k3 5% 0.5W
3922	4822 116 52228	680Ω 5% 0.5W
3924Δ	4822 113 80525	OR15 10% 3W
3924Δ	4822 113 80633	0Ω1 5% 3W
3926	4822 051 10102	1k 2% 0.25W
3931	4822 116 83881	390Ω 5% 0.5W
3932	4822 117 11449	2k2 1% 0.1W
3933	4822 051 20689	68Ω 5% 0.1W
3941	4822 053 20335	3M3 5% 0.25W
3950Δ	4822 053 21225	2M2 5% 0.5W
3955Δ	4822 051 20472	4k7 5% 0.1W
3959	4822 111 31051	3Ω3 5%
3962	4822 116 52249	1k8 5% 0.5W
3962	4822 116 52263	2k7 5% 0.5W
3963Δ	4822 051 20472	4k7 5% 0.1W
3964	4822 116 52257	22k 5% 0.5W
3976	4822 051 20182	1k8 5% 0.1W
3980	4822 116 52238	12k 5% 0.5W
3991	4822 116 52243	1k5 5% 0.5W
3994	4822 053 10683	68k 5% 1W
3995	4822 053 12104	100k 5% 3W
4xxx	4822 051 10008	0Ω 5% 0.25W
4xxx	4822 051 20008	0Ω 5% 0.25W

5080	4822 157 51216	5.6µH
5081	4822 157 51216	5.6µH
5090Δ	4822 157 52259	5.6µH
5100	4822 157 51216	5.6µH
5145	4822 157 70439	Adj. coil
5147	4822 157 11003	0.82µH
5160	4822 157 11676	3.3µH 5%
5161	4822 157 11676	3.3µH 5%
5168	4822 157 11518	5.6µH 5%
5168	4822 157 11524	8.2µH 5%
5315	4822 157 52333	100µH
5430	4822 157 53302	1µH
5431	4822 157 11516	15µH 5%
5432	4822 157 11526	22µH 5%
5601	4822 157 10359	33µH
5601	4822 157 11213	22µH
5610Δ	4822 142 40351	Line dr. tr. 29"
5610	4822 146 11045	Line dr. tr. 33"
5620	4822 157 60171	Bead 100mH
5621	4822 157 11671	Lin. coil 29"
5621	4822 157 11712	Lin. coil 33"
5622	4822 157 60171	Bead 100mH
5630Δ	4822 140 10649	LOT (1372.001) 29"
5630Δ	4822 146 11046	LOT (pow. slot) 34"
5643	4822 157 50964	100µH
5643	4822 157 52392	27µH
5660	4822 157 11672	12µH 5%
5662	4822 157 11672	12µH 5%
5733	4822 157 63506	Bead EMI 200mH
5860	4822 157 63507	0.18µH
5861	4822 157 63507	0.18µH
5863	4822 157 51216	5.6µH
5906	4822 526 10704	100mH
5907	4822 526 10704	100mH
5908	4822 526 10704	100mH
5909	4822 526 10704	100mH
5910	4822 526 10704	100mH
5911	4822 526 10704	100mH
5912Δ	4822 146 11021	Transf. DT441J.
5912Δ	4822 146 11044	Transf. DT464I
5930	4822 157 71401	27µH

6070Δ	4822 130 83757	BAS216
6071Δ	4822 130 83757	BAS216
6072Δ	4822 130 83757	BAS216
6073Δ	4822 130 83757	BAS216
6090	4822 130 34233	BZX79-B5V1
6145	5322 130 34955	BA482
6244Δ	4822 130 83757	BAS216
6300Δ	4822 130 83757	BAS216
6301Δ	4822 130 83757	BAS216
6302Δ	4822 130 83757	BAS216
6325Δ	4822 130 83757	BAS216
6328Δ	4822 130 83757	BAS216
6430Δ	4822 130 83757	BAS216
6431	4822 130 30862	BZX79-B9V1
6550Δ	4822 130 83757	BAS216
6621Δ	4822 130 41275	BY228
6621	4822 130 83825	BY328/20
6625	4822 130 42488	BYD33D
6626	4822 130 42488	BYD33D
6627	4822 130 42488	BYD33D
6628Δ	4822 130 30621	1N4148
6629	4822 130 34379	BZX79-B27
6630Δ	4822 130 30621	1N4148
6631Δ	4822 130 31024	BZX79-B18
6631	4822 130 34281	BZX79-B15
6638Δ	4822 130 34197	BZX79-B12
6638Δ	4822 130 34499	BZX79-B20
6639Δ	4822 130 30621	1N4148
6641	4822 130 42606	BYD33J
6646Δ	4822 130 30621	1N4148
6660Δ	4822 130 41602	BYW95C
6663Δ	4822 130 82029	LTL307P
6664Δ	4822 130 41602	BYW95C
6700	4822 130 42488	BYD33D
6719Δ	4822 130 34173	BZX79-B5V6
6731Δ	4822 130 30621	1N4148
6734	4822 130 42488	BYD33D
6735Δ	4822 130 30621	1N4148
6739Δ	4822 130 30621	1N4148
6741	4822 130 31253	BZX79-C2V4
6742Δ	4822 130 30621	1N4148
6743Δ	4822 130 30621	1N4148
6744	4822 130 34278	BZX79-B6V8
6861Δ	4822 130 83757	BAS216
6862Δ	4822 130 83757	BAS216
6867Δ	4822 130 30621	1N4148
6868Δ	4822 130 30621	1N4148
6903	4822 130 11185	GBU4J
6904Δ	4822 130 30621	1N4148
6906Δ	4822 130 32896	BYD33M
6908	4822 130 42488	BYD33D
6910	4822 130 42488	BYD33D
6911	4822 130 42488	BYD33D
6913	4822 130 11365	BYR29F-600
6914Δ	4822 130 80791	BYV28-200/20
6917Δ	4822 130 80791	BYV28-200/20
6918	4822 130 10678	BY229X-200
6918	4822 130 80982	BYW29F-100
6930	4822 130 31083	BYW55
6931	4822 130 31083	BYW55
6932	4822 130 31083	BYW55
6933	4822 130 31083	BYW55
6935Δ	4822 130 30621	1N4148
6950	4822 130 42488	BYD33D
6952	5322 130 31504	BZX79-B3V3
6955	4822 130 34142	BZX79-B33
6960	4822 130 42488	BYD33D
6992	4822 130 30862	BZX79-B9V1

7041	4822 130 60511	BC847B
7070	4822 130 60511	BC847B
7070Δ	4822 209 73852	PMBT2369
7075	4822 130 60511	BC847B
7085	4822 130 60511	BC847B
7088	4822 209 14928	ST24W16B6
7150	4822 209 16704	TDA8844/N2
7161	4822 130 60511	BC847B
7166	5322 130 60508	BC857B
7167	5322 130 60508	BC857B
7170	5322 130 60508	BC857B
7176	4822 130 60511	BC847B
7242	4822 130 60511	BC847B
7243	4822 130 60511	BC847B
7250	5322 209 10576	HEF4053BD
7251	4822 130 60511	BC847B
7255	4822 130 60511	BC847B
7261	4822 130 60511	BC847B
7264	4822 130 60511	BC847B
7265	4822 130 60511	BC847B
7270	4822 130 60511	BC847B
7325	5322 130 60508	BC857B
7430	4822 209 15832	MSP3410D-PP-B4
7430	4822 209 16307	MSP3400C-C8
7431Δ	4822 130 40981	BC337-25
7436	4822 209 10263	HEF4052BP
7437	4822 209 16919	TDA9855/V2
7550	4822 209 16705	TDA8563A/N1
7551	4822 130 60511	BC847B
7552	5322 130 60508	BC857B
7553	4822 130 40959	BC547B
7554	4822 130 40959	BC547B
7610	4822 130 42159	BF819
7620Δ	4822 130 63271	BU2508AF
7620	4822 130 63817	BU2520AF
7629	4822 130 44568	BC557B
7700	4822 209 61117	TDA8172
7715	4822 130 60511	BC847B
7716	4822 130 60511	BC847B
7743	4822 130 44568	BC557B
7745	4822 130 40959	BC547B
7748	4822 130 40959	BC547B
7800	4822 130 60511	BC847B
7860	4822 130 44154	BF199
7861	4822 130 42589	BF370
7862	4822 130 41617	BD830
7863	4822 130 41616	BD829
7900	4822 130 41246	BC327-25
7902	4822 209 16706	STR-F6654
7902	4822 209 16816	STR-F6656
7904	4822 209 16707	SE140N
7907	4822 209 32508	TDA8137

12 Spare parts list

7908Δ	4822 209 80591	LM317T
7909	4822 130 60511	BC847B
7950Δ	4822 209 16708	TCDT1103G

CRT panel [B]

Various

0218	4822 255 10411	10P Female
1019	4822 212 11856	CRT panel 29"
1019	4822 212 11754	CRT panel 34"

2830	4822 121 51473	470nF 20% 63V
2838Δ	4822 126 13451	2.2nF 10% 2KV
2840	4822 124 11565	10µF 20% 250V
2843Δ	4822 126 13451	2.2nF 10% 2KV

3831	4822 116 52175	100Ω 5% 0.5W
3832	4822 117 11635	1k 10% 0.5W
3833	4822 116 52175	100Ω 5% 0.5W
3834	4822 117 11635	1k 10% 0.5W
3835	4822 116 52175	100Ω 5% 0.5W
3836	4822 117 11635	1k 10% 0.5W
3840Δ	4822 052 10101	100Ω 5% 0.33W
3841Δ	4822 052 10108	1Ω 5% 0.33W
3842Δ	4822 052 10108	1Ω 5% 0.33W
3843	4822 117 11896	1k5 20% 0.5W
3845	4822 116 52272	330k 5% 0.5W

5842	4822 157 11447	56µH
5842	4822 157 71703	82µH

6831	4822 130 30842	BAV21
6833	4822 130 30842	BAV21
6835	4822 130 30842	BAV21
6837	4822 130 34379	BZX79-B27
6838	4822 130 34379	BZX79-B27

7830	4822 209 16321	TDA6107Q/N1

EW panel [C]

Various

0239	4822 267 10899	17P Male
1150	4822 212 11757	EW panel (29")
1150	4822 212 11772	EW panel (34")

2623Δ	4822 121 10781	470nF 5% 250V
2634Δ	4822 121 40488	22nF 10% 400V
2634Δ	4822 121 70365	39nF 10% 400V
2681	4822 122 31177	470pF 10% 500V
2682	4822 121 42035	4.7µF 10% 100V
2683	4822 124 12246	10µF 20% 160V
2688	4822 124 12247	47µF 20% 100V

3651	4822 116 52243	1k5 5% 0.5W
3651	4822 116 83883	470Ω 5% 0.5W
3656	4822 116 52238	12k 5% 0.5W
3657	4822 116 83864	10k 5% 0.5W
3658	4822 116 52234	100k 5% 0.5W
3659	4822 116 83864	10k 5% 0.5W
3679Δ	4822 053 11682	6k8 5% 2W
3680	4822 050 11204	120k 1% 0.4W
3680	4822 116 52304	82k 5% 0.5W
3681	4822 050 11002	1k 1% 0.4W
3682	4822 116 52234	100k 5% 0.5W
3682	4822 116 52304	82k 5% 0.5W
3683Δ	4822 050 24708	4Ω7 1% 0.6W
3684Δ	4822 050 24708	4Ω7 1% 0.6W
3687	4822 116 52283	4k7 5% 0.5W
3688	4822 116 52234	100k 5% 0.5W
3688	4822 116 52297	68k 5% 0.5W

5624	4822 157 71681	Bridge coil
5680	4822 157 11711	Choke coil
5680Δ	4822 158 10728	Transf. 11µH

6622Δ	4822 130 41602	BYW95C
6623Δ	4822 130 41602	BYW95C
6627Δ	4822 130 61219	BZX79-B10
6681Δ	4822 130 30621	1N4148

7658	4822 130 40959	BC547B
7659	4822 130 40959	BC547B
7680	4822 130 11336	STP16NE06FP

IO cinch [E]

Various

0130Δ	4822 466 12028	Rear brkt PIP
0130Δ	4822 466 12029	Rear brkt non-PIP
0265	4822 265 11388	6P Female
0266	4822 265 11389	3P Female
0267	4822 265 11391	4P Female
0295	4822 265 11392	3P Male
0296	4822 267 10895	5P Male
0297	4822 267 10898	6P Male
0298	4822 265 11393	3P Male
1130	4822 212 11753	IO cinch PIP
1130	4822 212 11756	IO cinch no-PIP

2100	4822 124 22726	4.7µF 35V
2101	4822 126 13473	220nF 50V
2112	4822 126 13473	220nF 50V
2116	4822 126 13473	220nF 50V
2118	4822 126 13473	220nF 50V
2121	4822 126 13473	220nF 50V
2131	5322 122 31863	330pF 5% 50V
2133	5322 122 31863	330pF 5% 50V
2141	4822 126 13473	220nF 50V
2146	5322 122 31863	330pF 5% 50V
2148	5322 122 31863	330pF 5% 50V
2151	5322 122 31863	330pF 5% 50V
2155	5322 122 31863	330pF 5% 50V
2156Δ	4822 126 10002	100nF 20% 25V
2157Δ	4822 126 10002	100nF 20% 25V
2158Δ	4822 126 10002	100nF 20% 25V
2159Δ	4822 126 10002	100nF 20% 25V

3101	4822 051 10102	1k 2% 0.25W
3102	4822 051 10102	1k 2% 0.25W
3110	4822 116 52201	75Ω 5% 0.5W
3111	4822 116 52201	75Ω 5% 0.5W
3112Δ	4822 051 20101	100Ω 5% 0.1W
3113	4822 051 10102	1k 2% 0.25W
3114	4822 051 10102	1k 2% 0.25W
3115	4822 051 10102	1k 2% 0.25W
3116	4822 051 20474	470k 5% 0.1W
3117	4822 051 10102	1k 2% 0.25W
3118Δ	4822 051 20101	100Ω 5% 0.1W
3130	4822 051 10102	1k 2% 0.25W
3131	4822 051 20223	22k 5% 0.1W
3132	4822 051 10102	1k 2% 0.25W
3133	4822 051 20223	22k 5% 0.1W
3140	4822 116 52201	75Ω 5% 0.5W
3141Δ	4822 051 20101	100Ω 5% 0.1W
3145	4822 051 10102	1k 2% 0.25W
3146	4822 051 20223	22k 5% 0.1W
3147	4822 051 10102	1k 2% 0.25W
3148	4822 051 20223	22k 5% 0.1W
3150	4822 116 52199	68Ω 5% 0.5W
3151	4822 117 10353	150Ω 1% 0.1W
3152	4822 051 20104	100k 5% 0.1W
3153	4822 117 10353	150Ω 1% 0.1W
3154	4822 117 10353	150Ω 1% 0.1W
3155	4822 051 20104	100k 5% 0.1W
3156	4822 117 10353	150Ω 1% 0.1W
3157	4822 117 10834	47k 1% 0.1W
3158	4822 117 10834	47k 1% 0.1W
3159	4822 117 10834	47k 1% 0.1W
3160	4822 117 10834	47k 1% 0.1W

6110	4822 130 34278	BZX79-B6V8
6111	4822 130 34278	BZX79-B6V8
6130	4822 130 34278	BZX79-B6V8
6131	4822 130 34278	BZX79-B6V8
6132	4822 130 34278	BZX79-B6V8
6133	4822 130 34278	BZX79-B6V8
6140	4822 130 34278	BZX79-B6V8
6145	4822 130 34278	BZX79-B6V8
6146	4822 130 34278	BZX79-B6V8
6147	4822 130 34278	BZX79-B6V8
6148	4822 130 34278	BZX79-B6V8
6150	4822 130 34278	BZX79-B6V8
6151	4822 130 34278	BZX79-B6V8
6152	4822 130 34278	BZX79-B6V8
6154	4822 130 34278	BZX79-B6V8
6155	4822 130 34278	BZX79-B6V8
6166Δ	4822 130 30621	1N4148
6167Δ	4822 130 30621	1N4148

7100	5322 209 10576	HEF4053BD
7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7115	4822 130 60511	BC847B
7117	4822 130 60511	BC847B

Comb filt. [G]

Various

0243Δ	4822 267 10888	5P Male
0254	4822 267 10927	11P Male F-pin
1130	4822 212 11763	Comb flt. NTSC
1130	4822 212 11773	Comb flt. Pal/Multi

2000	4822 124 41584	100µF 20% 10V
2001Δ	4822 126 10002	100nF 20% 25V
2002Δ	4822 126 10002	100nF 20% 25V
2003Δ	4822 126 10002	100nF 20% 25V
2004Δ	4822 126 10002	100nF 20% 25V
2010	4822 126 13482	470nF 16V
2011Δ	4822 126 10002	100nF 20% 25V
2012Δ	4822 126 10002	100nF 20% 25V
2012	4822 126 13482	470nF 16V
2013	5322 122 32531	100pF 5% 50V
2020	4822 126 13692	47pF 1% 63V
2021Δ	4822 126 10002	100nF 20% 25V
2022Δ	4822 126 10002	100nF 20% 25V
2023Δ	4822 126 10002	100nF 20% 25V
2024Δ	4822 126 10002	100nF 20% 25V
2025Δ	4822 126 10002	100nF 20% 25V
2026	4822 124 41584	100µF 20% 10V
2027Δ	4822 126 10002	100nF 20% 25V
2028	4822 124 41584	100µF 20% 10V
2029	5322 122 32268	470pF 10% 50V

3012	4822 117 11503	220Ω 1% 0.1W
3013	4822 117 11503	220Ω 1% 0.1W
3020Δ	4822 051 20472	4k7 5% 0.1W
3022	4822 117 10833	10k 1% 0.1W
3024	4822 117 10834	47k 1% 0.1W
3025	4822 117 10834	47k 1% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W
4xxx	4822 051 20008	0Ω 5% 0.25W

5000Δ	4822 157 51462	10µH
5012	4822 157 11515	12µH 5%
5012	4822 157 11516	15µH 5%

7000	4822 209 12998	SAA4961/V3/S1
7010	4822 209 16815	SAA4963/V1
7011	4822 130 60511	BC847B

Mains [H]

Various

0234Δ	4822 256 92053	Fuse holder
0262Δ	4822 267 10775	2P Male (black)
0263Δ	4822 265 20723	2P conn. BM vert.
0301Δ	4822 402 11113	Mains flt. brkt
1140	4822 212 11755	Mains CISPR pnl
1140	4822 212 11764	Mains CISPR(SR) pnl
1140	4822 212 11774	Mains non-CISPR pnl
1900	4822 070 34002	Fuse 4A

2900Δ	4822 121 10787	150nF 20% 275V
2901Δ	4822 126 14084	4.7nF 20% 250V
2903	4822 121 70141	33nF 5% 400V

3900Δ	4822 053 21475	4M7 5% 0.5W
3901Δ	4822 053 21225	2M2 5% 0.5W
3904	4822 117 12181	470Ω 20% 0.5W
3996Δ	4822 053 21475	4M7 5% 0.5W

5900Δ	4822 157 11523	5mH /2A
5901Δ	4822 157 11004	Line flt. 15mH
5902Δ	4822 157 10999	Line flt. 30mH
5903Δ	4822 157 11523	5mH /2A

6919Δ	4822 130 34499	BZX79-B20
6920Δ	4822 130 34499	BZX79-B20

QSS DK [J]

Various

0287	4822 267 10908	3P Male F-pin
0288	4822 267 10909	5P Male F-pin
1080	4822 212 11673	QSS DK panel
1402	4822 242 10782	SAW flt. OFWK9252M
1402	4822 242 81635	SAW flt. OFWK9253M

2405	4822 126 13614	4N710% 50V
2406Δ	4822 124 40246	4.7µF 20% 63V
2407Δ	4822 124 40246	4.7µF 20% 63V
2409	4822 122 30043	10nF 80% 63V

5402	4822 157 11709	9mH z
5403	4822 157 53139	4.7µH

7401	5322 209 62234	TDA3845/V3

Side AV [M]

Various

1120	4822 212 11685	Side AV panel
0225	4822 267 31014	Headphone socket
0226	4822 265 11336	3P Fem. cinch
0289	4822 265 11337	4P Fem. m.din
0291Δ	4822 267 10888	5P Male
0306	4822 402 11115	Side AV brkt.

2230	4822 122 33805	330pF 10% 63V
2233	4822 122 33805	330pF 10% 63V
2241Δ	5322 122 32654	22nF 10% 63V
2242Δ	5322 122 32654	22nF 10% 63V

3231	4822 051 20223	22k 5% 0.1W
3232	4822 051 10102	1k 2% 0.25W
3233	4822 051 20223	22k 5% 0.1W
3234	4822 116 52201	75Ω 5% 0.5W
3235Δ	4822 051 20008	0Ω jumper
3236	4822 116 52201	75Ω 5% 0.5W
3237Δ	4822 051 20008	0Ω jumper
3238	4822 051 10102	1k 2% 0.25W
3241	4822 117 10833	10k 1% 0.1W
3242	4822 117 10833	10k 1% 0.1W

6230	4822 130 34278	BZX79-B6V8
6231	4822 130 34278	BZX79-B6V8
6232	4822 130 34278	BZX79-B6V8
6233	4822 130 34278	BZX79-B6V8
6234	4822 130 34278	BZX79-B6V8

6235	4822 130 34278	BZX79-B6V8

Top ctrl [N]

Various

81	4822 441 12227	Brkt. & cover
1001	4822 276 13775	Switch
1002	4822 276 13775	Switch
1003	4822 276 13775	Switch
1004	4822 276 13775	Switch
1110	4822 212 11759	Top ctrl pnl

3043	4822 116 52256	2k2 5% 0.5W
3044	4822 116 52256	2k2 5% 0.5W
3045	4822 116 52269	3k3 5% 0.5W
3046	4822 116 52256	2k2 5% 0.5W
3048	4822 116 52238	12k 5% 0.5W
3049	4822 116 52271	33k 5% 0.5W

6040Δ	4822 130 30621	1N4148

YUV panel [R]

Various

0241Δ	4822 267 10888	5P Male
0242Δ	4822 267 10889	6P Male
0256	4822 267 10927	11P Male F-pin
1100	4822 212 11762	YUV PIP pnl
1100	4822 212 11766	YUV non-PIP pnl

2225Δ	4822 124 41579	10µF 20% 50V
2226Δ	4822 126 10002	100nF 20% 25V
2227Δ	4822 126 10002	100nF 20% 25V

3225Δ	4822 051 20101	100Ω 5% 0.1W
3332Δ	4822 051 20101	100Ω 5% 0.1W
3333Δ	4822 051 20101	100Ω 5% 0.1W
3336Δ	4822 052 10478	4Ω7 5% 0.33W
3337Δ	4822 051 20008	0Ω jumper

7770	4822 209 16814	TDA9178/N1

OSD panel [S]

Various

0201	4822 267 10932	5P Female
0204	4822 267 10932	5P Female
0207Δ	4822 267 10889	6P Male
0231Δ	4822 267 10888	5P Male
1101	4822 242 10947	crystal 4MHz
1160	4822 212 11767	OSD p. EN/MAL/ CHIN
1160	4822 212 11768	OSD p. EN/ARAB
1160	4822 212 11769	OSD p. EN/HANGUL
1160	4822 212 11771	OSD p. EN/TW

2100Δ	4822 124 40433	47µF 20% 25V
2101	4822 124 42362	33µF 20% 16V
2103Δ	4822 126 10002	100nF 20% 25V
2104Δ	4822 124 40433	47µF 20% 25V
2106	4822 126 13691	27pF 1% 63V
2107	4822 126 13691	27pF 1% 63V
2108Δ	4822 126 10002	100nF 20% 25V
2113	4822 122 33891	3.3nF 10% 63V
2114	4822 124 40242	1µF 20% 63V
2115	5322 122 33861	120pF 10% 50V

3100	4822 051 10102	1k 2% 0.25W
3101	4822 116 52175	100Ω 5% 0.5W
3102	4822 116 52175	100Ω 5% 0.5W
3103	4822 051 20562	5k6 5% 0.1W
3117	4822 051 10102	1k 2% 0.25W
3118	4822 051 10102	1k 2% 0.25W
3119	4822 051 10102	1k 2% 0.25W
3120	4822 051 10102	1k 2% 0.25W
3125	4822 116 52175	100Ω 5% 0.5W
3126	4822 116 52175	100Ω 5% 0.5W
3127	4822 051 20105	1M 5% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W
4xxx	4822 051 20008	0Ω 5% 0.25W

5100	4822 157 51216	5.6µH
5101	4822 157 51216	5.6µH

6100Δ	4822 130 83757	BAS216
6103Δ	4822 130 83757	BAS216
6104Δ	4822 130 83757	BAS216
6105Δ	4822 130 83757	BAS216
6106Δ	4822 130 83757	BAS216

7101	4822 209 16911	PCA8516P/028
7101	4822 209 16922	PCA8516P/030
7101	4822 209 16923	PCA8516P/032
7101	4822 209 16924	PCA8516P/029

(YC) PIP [T]

Various

0209Δ	4822 267 10888	5P Male
0216Δ	4822 267 10888	5P Male
0217Δ	4822 267 10892	4P Male
0302	4822 402 11155	PIP brkt.
1120	4822 212 11758	YC PIP (NTSC) pnl
1125Δ	4822 218 11936	Splitter NTSC
1126Δ	4822 210 10828	Tuner UV PH TELH9
1140	4822 242 10945	SAW flt. OFWM3953M
1351	4822 242 71861	cr. 14.31818MHz)

2125	4822 124 81029	100µF 20% 25V
2126	4822 124 81029	100µF 20% 25V
2127Δ	4822 126 12944	47nF 10% 50V
2144Δ	4822 126 10002	100nF 20% 25V
2148Δ	4822 124 40246	4.7µF 20% 63V DXH=5X11
2149Δ	4822 124 41579	10µF 20% 50V
2150Δ	4822 126 10002	100nF 20% 25V
2156Δ	4822 126 10002	100nF 20% 25V
2351	4822 122 32139	12pF 2% 63V
2352	4822 126 13473	220nF 50V
2353	5322 126 10511	1nF 5% 50V
2354	5322 122 32531	100pF 5% 50V
2355Δ	4822 124 41579	10µF 20% 50V
2356Δ	4822 126 10002	100nF 20% 25V
2357	4822 124 40242	1µF 20% 63V
2358Δ	4822 126 10002	100nF 20% 25V
2359Δ	4822 122 33177	10nF 20% 50V
2360	4822 124 40242	1µF 20% 63V
2361	4822 126 13805	68nF 10 16V
2362	4822 122 32139	12pF 2% 63V
2363Δ	4822 126 10002	100nF 20% 25V
2364Δ	4822 122 33177	10nF 20% 50V
2365Δ	4822 126 10002	100nF 20% 25V
2366	5322 121 42386	100nF 5% 63V
2367	4822 126 13473	220nF 50V
2368Δ	4822 122 32627	2.7nF 10% 50V
2369Δ	4822 122 33177	10nF 20% 50V
2370Δ	4822 122 33177	10nF 20% 50V
2371Δ	4822 122 33177	10nF 20% 50V
2372Δ	4822 124 41579	10µF 20% 50V
2373Δ	4822 126 10002	100nF 20% 25V
2374Δ	4822 122 33177	10nF 20% 50V
2375Δ	4822 126 10002	100nF 20% 25V
2376Δ	4822 124 41579	10µF 20% 50V
2377Δ	4822 126 10002	100nF 20% 25V
2378	5322 126 10511	1nF 5% 50V
2379Δ	4822 126 10002	100nF 20% 25V
2380Δ	4822 122 33177	10nF 20% 50V
2381Δ	4822 122 33177	10nF 20% 50V
2382Δ	4822 122 33177	10nF 20% 50V
2383Δ	4822 126 10002	100nF 20% 25V
2384Δ	4822 124 41579	10µF 20% 50V

3126	4822 117 10833	10k 1% 0.1W
3127	4822 117 10833	10k 1% 0.1W
3128	4822 051 20333	33k 5% 0.1W
3129Δ	4822 051 20101	100Ω 5% 0.1W
3130Δ	4822 051 20101	100Ω 5% 0.1W
3131Δ	4822 051 20472	4k7 5% 0.1W
3140	4822 101 11193	47k 30% 0.1W
3141	4822 101 11191	10k 30% 0.1W
3144	4822 051 20331	330Ω 5% 0.1W
3145	4822 116 52257	22k 5% 0.5W
3146	4822 051 20223	22k 5% 0.1W
3160Δ	4822 051 20008	0Ω jumper
3163	4822 051 20331	330Ω 5% 0.1W
3167Δ	4822 051 20008	0Ω jumper
3168Δ	4822 051 20471	470Ω 5% 0.1W
3169	4822 116 83883	470Ω 5% 0.5W
3350Δ	4822 051 20472	4k7 5% 0.1W
3351Δ	4822 051 20472	4k7 5% 0.1W
3352	4822 116 52175	100Ω 5% 0.5W
3353	4822 116 52175	100Ω 5% 0.5W
3354	4822 051 20474	470k 5% 0.1W
3355Δ	4822 051 20101	100Ω 5% 0.1W
3356	4822 051 20759	75Ω 5% 0.1W
3357	4822 051 20759	75Ω 5% 0.1W
3358	4822 051 20759	75Ω 5% 0.1W
3359	4822 051 20759	75Ω 5% 0.1W
3360	4822 051 20104	100k 5% 0.1W
3361	4822 051 20683	68k 5% 0.1W
3362	4822 117 11383	12k 1% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W
4xxx	4822 051 20008	0Ω 5% 0.25W

5100	4822 157 53302	1µH
5125	4822 157 53139	4.7µH
5147	4822 157 11713	91.5mH z
5150	4822 157 53139	4.7µH
5350	4822 157 53139	4.7µH
5351	4822 157 53139	4.7µH
5352	4822 157 53139	4.7µH
5353	4822 157 53139	4.7µH

7140	4822 209 31532	TDA9800/V3
7350	4822 209 16817	MC44462B

Eco Dbl. Wndw

Various

0209Δ	4822 267 10888	5P Male
0215Δ	4822 267 10889	6P Male
0216Δ	4822 267 10888	5P Male
0217Δ	4822 267 10892	4P Male
0330	4822 267 10934	Connector
0331	4822 267 10935	Connector
1120	4822 212 11789	Eco DW pnl
1120	4822 212 11791	Eco DW pnl (/93)
1300Δ	4822 210 10827	Tuner UV PH TELE9
1300Δ	4822 210 10829	Tuner UV CHI PH
1301	4822 218 11937	Splitter Pal
1302	4822 242 10307	SAW flt. OFWG3956M
1302	4822 242 10783	SAW flt. OFWK3955M
1303	4822 242 10695	cr. 4.433619MHz
1306	4822 242 10776	cr. 3.579545MHz

2300	4822 124 41796	22µF 20% 16V
2301	4822 126 14087	100nF 10% 63V
2302	4822 126 14087	100nF 10% 63V
2304	4822 126 14087	100nF 10% 63V
2305	4822 124 11947	10µF 20% 16V
2306	4822 126 14087	100nF 10% 63V
2307	4822 124 11947	10µF 20% 16V
2309	4822 126 14087	100nF 10% 63V
2310	4822 126 14087	100nF 10% 63V
2311	4822 126 14087	100nF 10% 63V
2312	4822 124 11947	10µF 20% 16V
2313	4822 126 14087	100nF 10% 63V
2314	4822 124 11947	10µF 20% 16V
2315	4822 126 14087	100nF 10% 63V
2316	4822 126 14087	100nF 10% 63V
2317	4822 126 14087	100nF 10% 63V
2319	4822 126 14087	100nF 10% 63V
2322	4822 126 14087	100nF 10% 63V
2327	4822 124 22651	1.0µF 20% 50V
2328	4822 124 11947	10µF 20% 16V
2329	4822 126 14087	100nF 10% 63V
2341	4822 126 14087	100nF 10% 63V
2342	5322 122 33538	150pF 2% 63V
2343	4822 126 14087	100nF 10% 63V
2344	4822 126 14087	100nF 10% 63V
2345	4822 126 14087	100nF 10% 63V
2346	5322 122 33538	150pF 2% 63V
2347	4822 126 14087	100nF 10% 63V
2348	5322 122 33538	150pF 2% 63V
2351	4822 126 14087	100nF 10% 63V
2352	4822 126 14087	100nF 10% 63V
2353	4822 126 14087	100nF 10% 63V
2354	4822 126 14087	100nF 10% 63V
2355	4822 124 11947	10µF 20% 16V
2356	4822 126 14087	100nF 10% 63V
2358	4822 124 11947	10µF 20% 16V
2359	4822 126 14087	100nF 10% 63V
2361	4822 126 14087	100nF 10% 63V
2362	5322 122 33538	150pF 2% 63V
2363	4822 126 14087	100nF 10% 63V
2364	5322 122 33538	150pF 2% 63V
2365	4822 126 14087	100nF 10% 63V
2366	5322 122 33538	150pF 2% 63V
2368	4822 124 11947	10µF 20% 16V
2369	4822 126 14087	100nF 10% 63V
2371	4822 124 22726	4.7µF 35V
2373	4822 126 14087	100nF 10% 63V
2374	4822 126 14087	100nF 10% 63V
2378Δ	4822 122 33177	10nF 20% 50V
2379Δ	4822 124 12032	4.7µF 20% 50V
2382	5322 122 34098	10nF 10% 63V
2383	4822 124 11947	10µF 20% 16V
2384	4822 126 14087	100nF 10% 63V
2385	5322 122 34098	10nF 10% 63V
2386	5322 122 34098	10nF 10% 63V
2387	5322 122 31873	2.7pF 100V
2388	4822 126 13694	68pF 1% 63V
2389	5322 122 31873	2.7pF 100V
2390	5322 122 31873	2.7pF 100V
2392	5322 122 34098	10nF 10% 63V
2393	4822 126 14087	100nF 10% 63V
2394	4822 124 11947	10µF 20% 16V
2400	4822 126 14087	100nF 10% 63V
2401	4822 126 14087	100nF 10% 63V
2402	4822 126 14087	100nF 10% 63V
2403	4822 124 81286	47µF 20% 16V
2404	4822 126 14087	100nF 10% 63V
2405	4822 126 14087	100nF 10% 63V
2406	4822 126 13692	47pF 1% 63V
2407	4822 124 22652	2.2µF 20% 50V
2408Δ	5322 122 32654	22nF 10% 63V
2410	4822 124 22651	1.0µF 20% 50V
2411	4822 126 13869	470nF 20% 16V
2412Δ	5322 126 10223	4.7nF 10% 63V
2413	4822 126 13061	220nF 20% 25V
2414	4822 126 13689	18pF 1% 63V
2417	4822 126 13689	18pF 1% 63V
2418	4822 126 14087	100nF 10% 63V
2419Δ	5322 126 10223	4.7nF 10% 63V
2422	4822 126 14087	100nF 10% 63V
2423	4822 126 13061	220nF 20% 25V
2424	4822 126 14087	100nF 10% 63V
2425	4822 126 14087	100nF 10% 63V
2426	4822 126 14087	100nF 10% 63V
2427	4822 126 13061	220nF 20% 25V
2428	4822 126 13061	220nF 20% 25V
2429	4822 126 13061	220nF 20% 25V
2432	4822 126 13061	220nF 20% 25V
2433	4822 126 13061	220nF 20% 25V
2434	4822 126 13061	220nF 20% 25V
2435	4822 126 14087	100nF 10% 63V
2440	4822 126 14087	100nF 10% 63V
2450	4822 122 33175	2.2nF 20% 50V

3301	4822 051 20479	47Ω 5% 0.1W
3302	4822 117 10353	150Ω 1% 0.1W
3303	4822 051 20479	47Ω 5% 0.1W
3304	4822 117 10353	150Ω 1% 0.1W
3305	4822 051 20479	47Ω 5% 0.1W
3306	4822 117 10353	150Ω 1% 0.1W
3309	4822 051 20223	22k 5% 0.1W
3311	4822 051 20182	1k8 5% 0.1W
3312Δ	4822 051 20332	3k3 5% 0.1W
3317	4822 117 11503	220Ω 1% 0.1W
3318	4822 117 11503	220Ω 1% 0.1W
3319	4822 117 11503	220Ω 1% 0.1W
3321	4822 051 20681	680Ω 5% 0.1W
3322	4822 117 11503	220Ω 1% 0.1W
3323	4822 117 11503	220Ω 1% 0.1W
3324	4822 117 11503	220Ω 1% 0.1W
3327Δ	4822 052 10108	1Ω 5% 0.33W
3335Δ	4822 052 10228	2Ω2 5% 0.33W
3336Δ	4822 051 20472	4k7 5% 0.1W
3339	4822 117 10834	47k 1% 0.1W
3340	4822 117 11449	2k2 1% 0.1W
3341Δ	4822 051 20332	3k3 5% 0.1W
3342Δ	4822 051 20332	3k3 5% 0.1W
3346	4822 117 11449	2k2 1% 0.1W
3347	4822 117 11449	2k2 1% 0.1W
3348	4822 117 10833	10k 1% 0.1W
3349	4822 051 10102	1k 2% 0.25W
3350	4822 117 11449	2k2 1% 0.1W
3351	4822 117 10353	150Ω 1% 0.1W
3352Δ	4822 051 20472	4k7 5% 0.1W
3355Δ	4822 051 20101	100Ω 5% 0.1W
3356Δ	4822 051 20101	100Ω 5% 0.1W
3357	4822 051 20393	39k 5% 0.1W
3358	4822 051 20393	39k 5% 0.1W
3359Δ	4822 051 20471	470Ω 5% 0.1W
3360	4822 117 10833	10k 1% 0.1W
3361Δ	4822 051 20332	3k3 5% 0.1W

12 Spare parts list

3364Δ	4822 051 20472	4k7 5% 0.1W
3367	4822 117 10833	10k 1% 0.1W
3368Δ	4822 051 20332	3k3 5% 0.1W
3373	4822 117 11139	1k5 1% 0.1W
3374	4822 051 10102	1k 2% 0.25W
3375	4822 117 11503	220Ω 1% 0.1W
3376	4822 117 11449	2k2 1% 0.1W
3385	4822 051 20475	4M7 5% 0.1W
3390	4822 100 11676	10k 30% 0.2W
3392	4822 051 10102	1k 2% 0.25W
3393	4822 117 11449	2k2 1% 0.1W
3394	4822 051 20822	8k2 5% 0.1W
3396	4822 051 20822	8k2 5% 0.1W
3397	4822 051 20822	8k2 5% 0.1W
3400	4822 051 20104	100k 5% 0.1W
3427	4822 117 11139	1k5 1% 0.1W
3428Δ	4822 051 20101	100Ω 5% 0.1W
3429Δ	4822 051 20101	100Ω 5% 0.1W
3430	4822 117 12955	2k7 1% 0.1W 0805
3431	4822 051 20562	5k6 5% 0.1W 0805
3432	4822 117 10833	10k 1% 0.1W
3433	4822 051 20122	1k2 5% 0.1W
3434	4822 051 20122	1k2 5% 0.1W
3435	4822 051 20392	3k9 5% 0.1W
3437Δ	4822 052 10108	1Ω 5% 0.33W
3438	4822 051 10102	1k 2% 0.25W
3443Δ	4822 051 20471	470Ω 5% 0.1W
3444	4822 117 11139	1k5 1% 0.1W
3445	4822 117 11139	1k5 1% 0.1W
3446	4822 117 11503	220Ω 1% 0.1W
3447	4822 051 10102	1k 2% 0.25W
3451	4822 051 20182	1k8 5% 0.1W
3452Δ	4822 051 20332	3k3 5% 0.1W
3455	4822 051 20182	1k8 5% 0.1W
3456Δ	4822 051 20332	3k3 5% 0.1W
3461Δ	4822 051 20101	100Ω 5% 0.1W
3463Δ	4822 051 20101	100Ω 5% 0.1W
3487Δ	4822 051 20472	4k7 5% 0.1W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5300	4822 157 11506	100mH
5301	4822 157 11506	100mH
5302	4822 157 11506	100mH
5303	4822 157 11506	100mH
5304	4822 157 11506	100mH
5305	4822 157 11506	100mH
5306	4822 157 11506	100mH
5307	4822 157 11506	100mH
5308	4822 157 11506	100mH
5309	4822 157 11506	100mH
5310	4822 157 11506	100mH
5311	4822 157 11506	100mH
5312	4822 157 11506	100mH
5313	4822 157 70439	Adj. coil
5315	4822 157 53302	1µH
5316	4822 157 11506	100mH
5317	4822 157 11506	100mH
5318	4822 157 11506	100mH
5319Δ	4822 051 20008	jumper

6300	4822 130 11366	BZX284-C3V9

7300	4822 130 10414	BA792
7301	4822 130 10414	BA792
7302	4822 209 16821	SAB9061H/N1
7303	4822 209 16824	BA033FP
7304	4822 209 90031	TDA8310/N1
7305	4822 209 90036	TDA8395T/N2
7306	4822 209 61751	TC7S32F
7307	4822 209 31754	TC7S86F
7308	5322 209 33172	PCF8574AT
7309	4822 130 60511	BC847B
7310	5322 130 60508	BC857B
7311	4822 130 60511	BC847B
7312	4822 130 60511	BC847B
7313	5322 130 60508	BC857B
7318	4822 209 16822	SAB9062H/N1